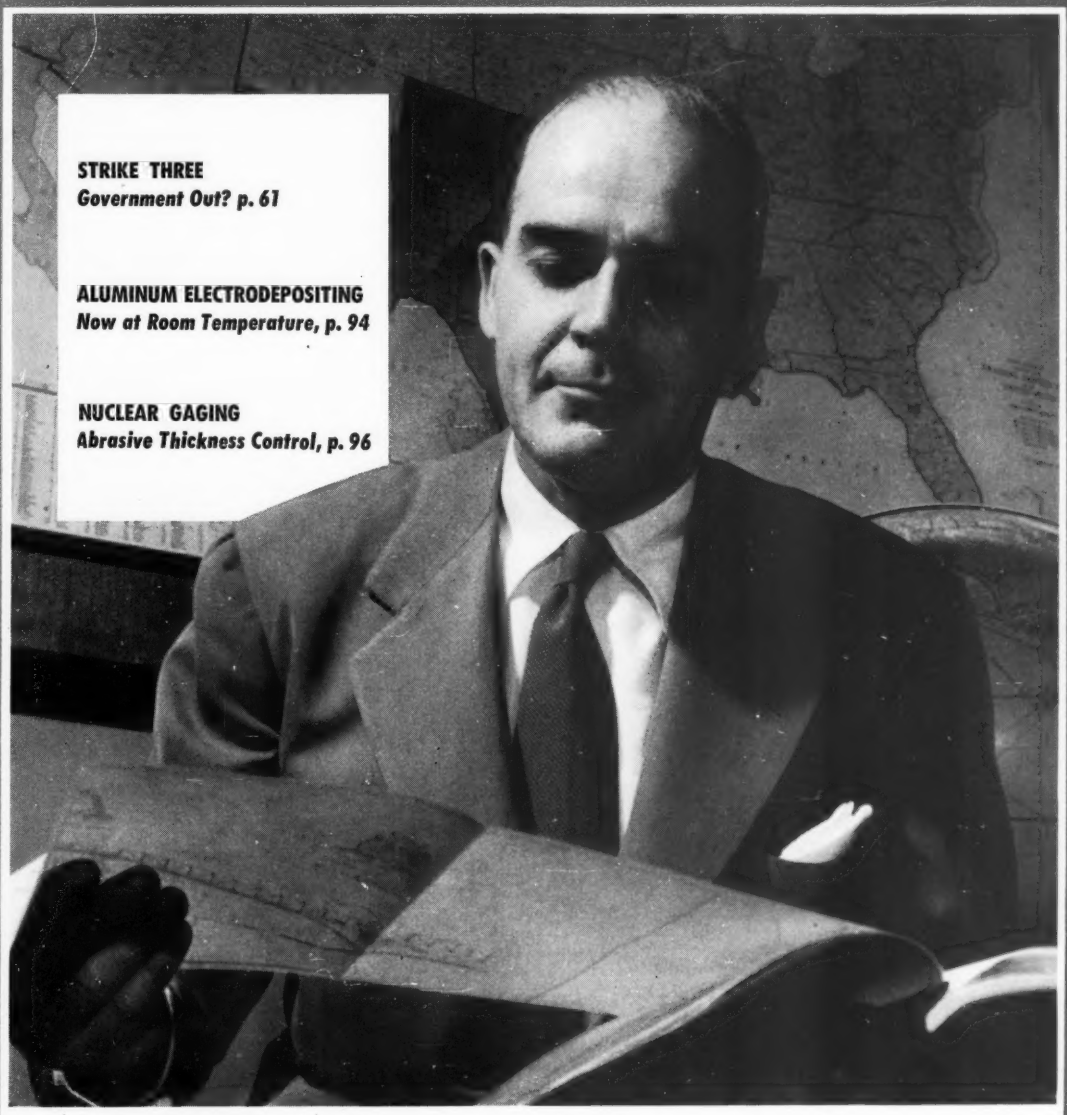
JUNE 9, 1952

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

OHIO STATE UNIVERSITY
JUN 9 - 1952
LIBRARY



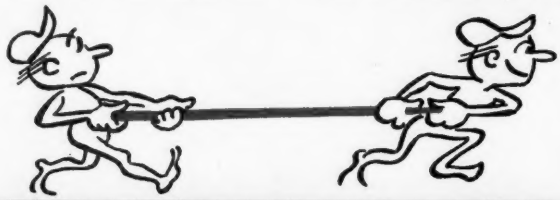
STRIKE THREE
Government Out? p. 61

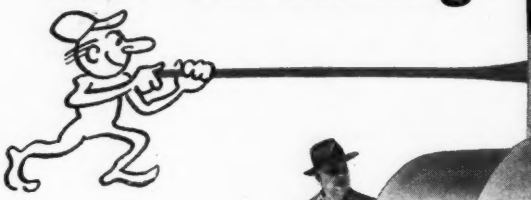
ALUMINUM ELECTRODEPOSITING
Now at Room Temperature, p. 94

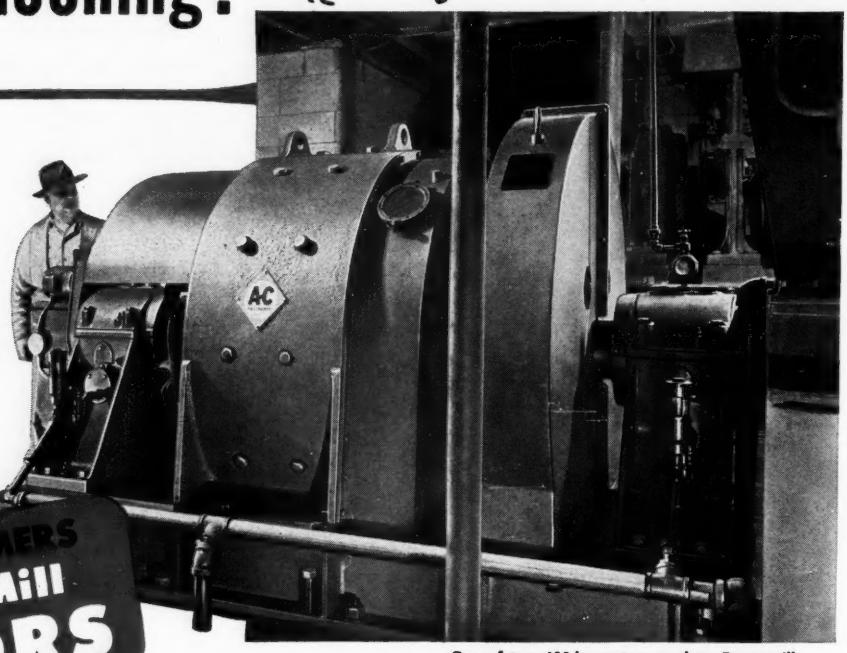
NUCLEAR GAGING
Abrasive Thickness Control, p. 96

✓ **SALESMEN:** "They'll be ready," says Link-Belt's D. E. Davidson, *p. 72*

Engineered to Prevent Excessive Tube Stretching and Ballooning!







ALLIS-CHALMERS Rolling Mill MOTORS

One of two 600-hp motors used on Foren mill rolling hot-finished tubing from pierced billets.

IN CLOSE-COUPLED TUBE MILLS, off-gauge production due to stretching and lost production due to ballooning can be prevented only by obtaining full speed coordination between stands.

One of the essentials for such speed coordination is low impact speed drop. The 600-hp, 690/1380-rpm direct-current motor shown above gains this objective by a combination of mechanical and electrical design features.

Mechanically, the motor itself is of high inertia design, with a very high peripheral speed. In addition, it is provided with a separate flywheel for added stability.

Further assurance of low impact speed drop results from electrical characteristics made to give low resistance and low inductance. This tends to reduce the transient change in speed when load is applied.

Used on Foren Tube Mill

Two of these 600-hp motors were installed by *Globe Steel Tubes Company* of Milwaukee when they revamped their Foren Mill in 1951.

When the mill was placed in operation 20 years ago, it was one of the first of its kind in the world and had three times the speed of older mills. This high speed was the result of close coordination in mill, motor and control design — with Allis-Chalmers being called in to engineer and supply both the original motors and the control.

Now, using fewer stands and larger motors, the revamped mill is powered by 11 Allis-Chalmers motors totalling 2453 hp, plus a 200-hp bar extractor drive.

CHECK YOUR NEEDS

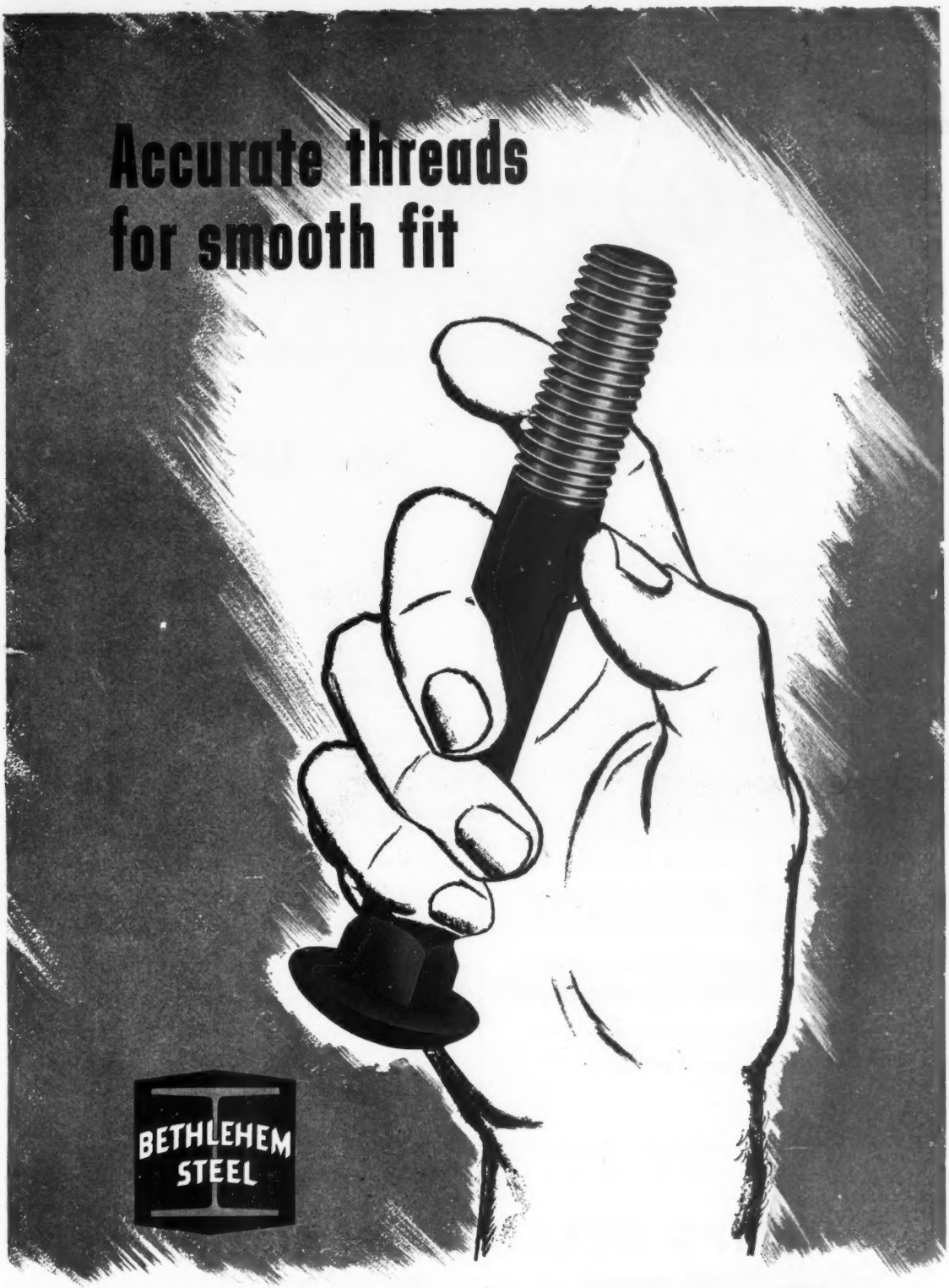
For more information about custom-engineered large dc motors, including an explanation of the Frog-Leg *winding, ask your nearby A-C representative for Bulletin 05B6002A. Or write to Allis-Chalmers, Milwaukee 1, Wisconsin.*

A-3594

Frog-Leg is an Allis-Chalmers trademark.

ALLIS-CHALMERS

A-C ALLIS CHALMERS

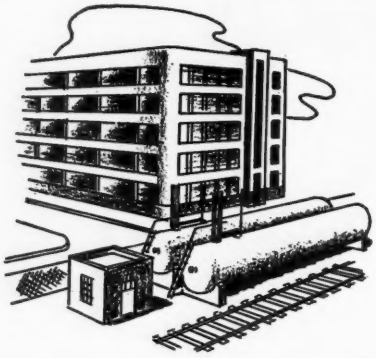


Bethlehem supplies every type of Fastener

Phillips 66 Philgas*

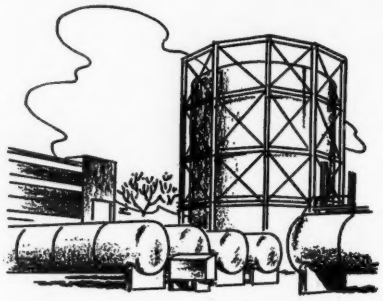
THE ALL-PURPOSE FUEL

For Industries



Philgas, a clean, high-quality LP-Gas, is being used by leading industries for heat treating, mold drying, core baking, ceramic firing and many other operations. Philgas butane-propane systems are automatic, cutting down on overhead while assuring constant furnace temperatures, atmospheres, and pressures.

For Utilities



Free from harmful contaminants, Philgas is used by many progressive utilities to augment supplies of natural or manufactured gas. Cleanliness, uniformity, constant pressures (high or low) and easy automatic operation make Philgas a *superior* product. It's America's largest selling brand of LP-Gas.

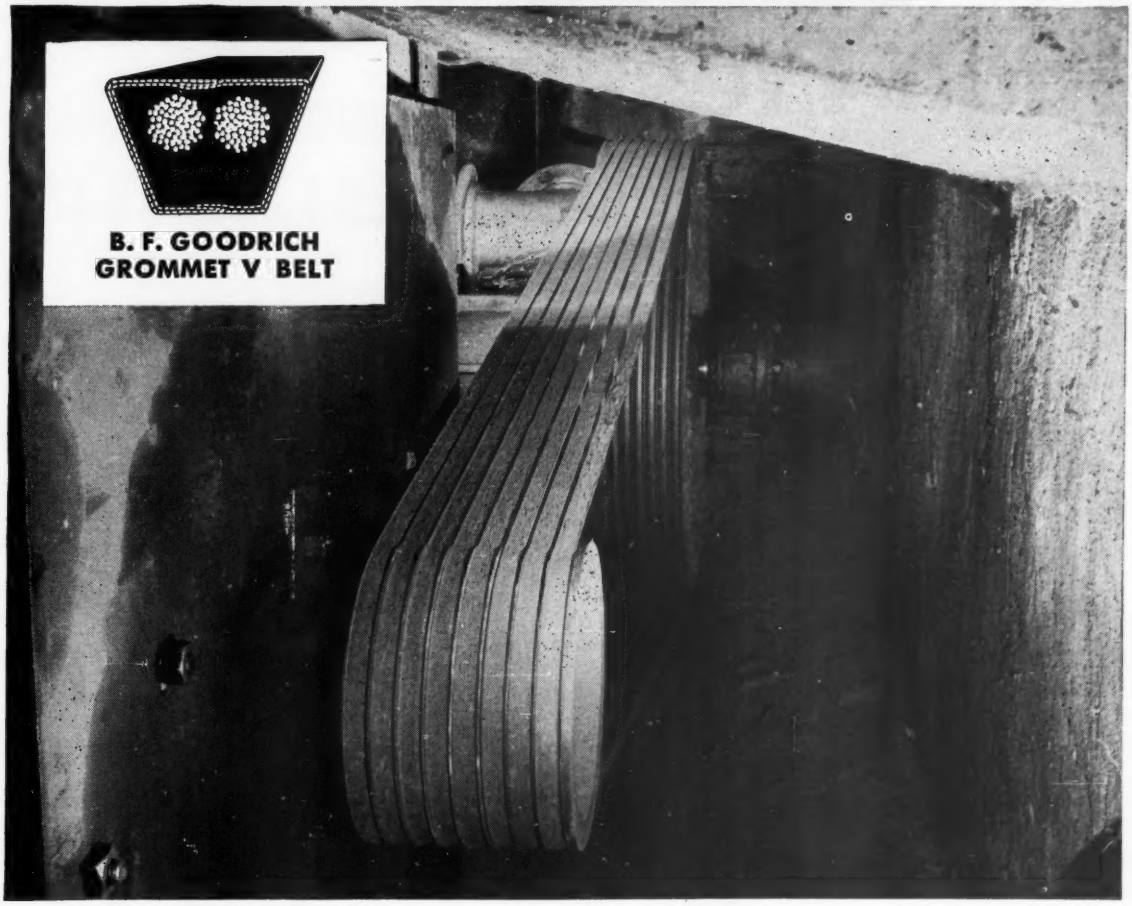
*Phillips *66* and Philgas are the Phillips Petroleum Company trademarks for its high quality propane-butane LP-Gas or bottled gas.

PHILLIPS PETROLEUM COMPANY

Sales Department Bartlesville, Oklahoma

Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Pontiac, Mich., Indianapolis, Ind., Kansas City, Mo., Milwaukee, Wis., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tulsa, Okla., Wichita, Kan.

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



B.F.Goodrich grommet belts saved $250.00 a year

B. F. Goodrich grommet V belts cut costs 20 to 50%

THESE belts have to run 24 hours a day under terrific tension. Ordinary V belts used to snap in two, fly off this drive in only 4 months. In September 1950, B. F. Goodrich grommet belts were installed. They have already lasted 4 times as long as previous belts, still look good, and are saving over $250.00 a year in replacement costs. Here's why B. F. Goodrich grommet belts can be counted on to save on belt costs:

No cord ends—A grommet is endless, made by winding heavy cord on itself to form an endless loop. It has no overlapping ends. Because most of the failures in ordinary V belts occur in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

Concentrated cord strength — All of the cord material in a B. F. Goodrich grommet multiple-V belt is *concentrated* in twin grommets, positioned close to the driving faces of the pulley. No layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced.

Better grip, less slip — Because a grommet is endless, a grommet V belt is more flexible, grips the pulleys better. Size for size, grommet multiple-V belts will give ⅓ more gripping power, pull heavier loads with a higher safety factor.

Only B. F. Goodrich has the grommet!—No other multiple-V belt is a grommet V belt (U. S. Patent No. 2,233,294). Now available in C, D and E sections. See your local B. F. Goodrich distributor. *The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.*

Grommet V Belts BY
B.F.Goodrich
RUBBER FOR INDUSTRY

For better High Pressure Control Mechanisms

EATON Permanent Mold Gray Iron Castings

Send for your copy of the illustrated booklet, "A Picture Tour of the Eaton Permanent Mold Foundry."

Free machinability
Dense, homogeneous structure
Freedom from leakage under pressure
Machines to high, mirror-like finish
Properly annealed; no growth or distortion after machining

EATON MANUFACTURING COMPANY
CLEVELAND, OHIO
FOUNDRY DIVISION: 9771 FRENCH ROAD • DETROIT 13, MICHIGAN

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

This Week in Metalworking

STEEL

Vol. 130 No. 23 June 9, 1952

✓NEWS ✓PRODUCTION-ENGINEERING ✓MARKETS

✓**Metalworking Outlook** 53

As the Editor Views the News 57
Editor Irwin H. Such's views and reviews of the political and industrial scenes in this, an election year

Windows of Washington 68

Mirrors of Motordom 75

The Business Trend 79
Facts and figures on segments of metalworking...STEEL's Industrial Production Index . . . Barometers of Business

Men of Industry 83

✓**Production-Engineering News at a Glance** 89

Coated Abrasives Ease Jet Blade Finishing Problems 90
Hard-to-get-at contoured surfaces of jet blades, buckets are easily ground and polished by coated belts

Aluminum Electrodeposited at Room Temperature 94
Dense, ductile deposits of aluminum with good physical properties can be produced by hydride plating bath

Nuclear Gaging Sets Abrasive Coating Thickness 96
Thickness, density of adhesive and abrasive coat varies no more than one per cent with isotope device

4000 Turns on a One-Inch Aramature 103
How a jeweler's techniques are used to produce tiny, precision aircraft control parts

Progress in Steelmaking 106
Blast Furnace Practice—Part XI (b). Beneficiation of Air: Temperature head in lower bosh must be controlled

New Products and Equipment 139

✓**The Market Outlook** 155
Metal Prices and Composites start on Page 156

The Metal Market 167

Behind the Scenes	6	Obituaries	86
Letters to the Editors	12	Calendar of Meetings	136
Subcontract Summary	66	Helpful Literature	151
Checklist on Controls	67	Here, There in Industry	177

Editorial, Business Staffs—10. Advertising Index—183. Editorial Index available semi-annually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1952 by Penton Publishing Co.

AVAILABLE
NOW
for
ANTI-CORROSION
SERVICE

PLA-TANK®

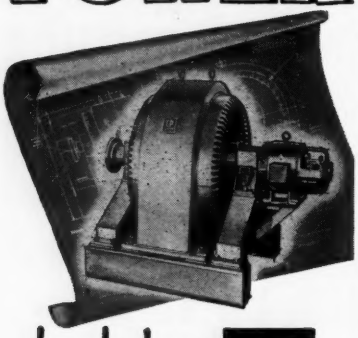
Resin-Bonded Fiberglas®
PIPE
Sizes 2" to 12", incl.
FITTINGS
Elbows, Tees — all the fittings you need for sizes 2" to 12" pipe.
IMMEDIATE
SHIPMENTS
from completely equipped plant now in full production.
DUCTS
Standard sizes 6"-48".
Hoods and rectangular shapes to order.

PLA-TANK supplies the answer to many problems involving transfers of corrosive liquids or gases. Made of Fiberglas, impregnated and bonded with polyester resin, it is molded into strong, rigid units — units that will be resistant at temperatures from −60°F. to +280°F. Pipe joints are easily made right on the job with PLA-TANK Fittings and "paint brush welds." Competitively priced, its long life proved in service, PLA-TANK is immediately available to meet your needs.

Write for latest literature

THE Chemical CORPORATION
56 Waltham Ave., Springfield 9, Mass.

for
custom-engineered
POWER



look to... EP

Since 1909, the job of The Electric Products Company has been to create and develop special electrical rotating equipment . . . motors and generators to do existing jobs better or to reach into new fields to do jobs that couldn't be done before. The natural "by-product" of our more than 40 years of specialization is that you get equipment designed and built to the exact requirements of your application . . . equipment that has greater dependability, longer life and that requires less maintenance.

Send in the coupon below for detailed information about our Custom-Engineered synchronous motors and generators . . . d-c motors and generators . . . induction motors . . . battery chargers . . . frequency changers.

A nation-wide sales engineering and service organization stands ready to meet all User requirements.

THE ELECTRIC
PRODUCTS COMPANY

1720 CLARKSTONE ROAD
CLEVELAND 12, OHIO

Attach coupon to your letterhead for your copy of Bulletin 2-200.

NAME_____
TITLE_____
COMPANY_____
STREET_____
CITY_____ ZONE____ STATE_____
X-74

Behind the Scenes...

Too Good, Almost

The photograph for this week's cover was one of the clearest and finest that Bill Kellogg and his art department have yet handled. It was taken for STEEL by the commercial photography house, Chicago Photographers, and the subject, of course, is David E. Davidson, sales vice president for Link-Belt Co., with whom this week's cover story deals a little to the east of here.

The fine quality of the photography almost proved disastrous. The clarity of the print showed the weave in Mr. Davidson's suit, a weave almost identical with the dots in the engraver's screen. That set up what is known as a moiré pattern, considered undesirable by graphic arts men.

Well, the engravers and the artists got out their bags of tricks and did away with the undesirable moiré pattern. If we weren't around to reveal all, you readers would never have known the difference.

Tool Steel Guide

We were upstairs the other day talking to Assistant Editor Bob Huber. He showed us the "Guide for Selecting Tool Steels and Carbides" he's been working on for STEEL's next issue, June 16.

More than 50 tool steel companies are listed with all their products. The listing shows what the steels are to be used for, what their trade names are and the chemical analysis for each steel. The guide also tells what quenching medium to use in heat-treating and gives some of the physical characteristics of the steel.

About 1000 different steels are listed and indexes make it easy to find any of them by trade name and application. It looks to us like the buyers can order right from the guide—the most complete and best organized reference on tool steels we've seen.

Changes

Two staff changes on the magazine occur this month. Sam Baker goes to New York from Cleveland to give STEEL more complete coverage in the East, and Ed Karpick moves from the home office to Pittsburgh where he'll replace Dan Reebel who has resigned.

Sam will specialize on nonferrous markets in the East and will also do some other news, market and engineering coverage. Ed will keep abreast of the general business, market and engineering news for you in the Steel City. Sam joins L. E. Browne and Ben Price, with offices in New York.

Traveler

STEEL gets around. Walter C. Brooks, now a captain in the U. S. Army in Japan but once one of the men that set the magazine's copy on our typesetting machines, reports that the May 13 Pacific issue of *Stars & Stripes* carried one of our editor's items. He estimated that the amount of steel lost due to strikes in April would have been sufficient to build 1 million new cars. That estimate was carried in the services' paper.

Walter Brooks spent a lot of time in Korea, mostly around Seoul with an Ordnance outfit. After that tour, he was transferred to Camp Crawford, Sapporo, Hokkaido, which is the northernmost of the Japanese chain of islands. "It is cold up here and the wind blows almost unceasingly," he reports, "but it isn't Korea."

Camp Crawford has facilities for dependents of the service men, plus an 18-hole golf course, swimming pool, theater, commissary and post exchange.

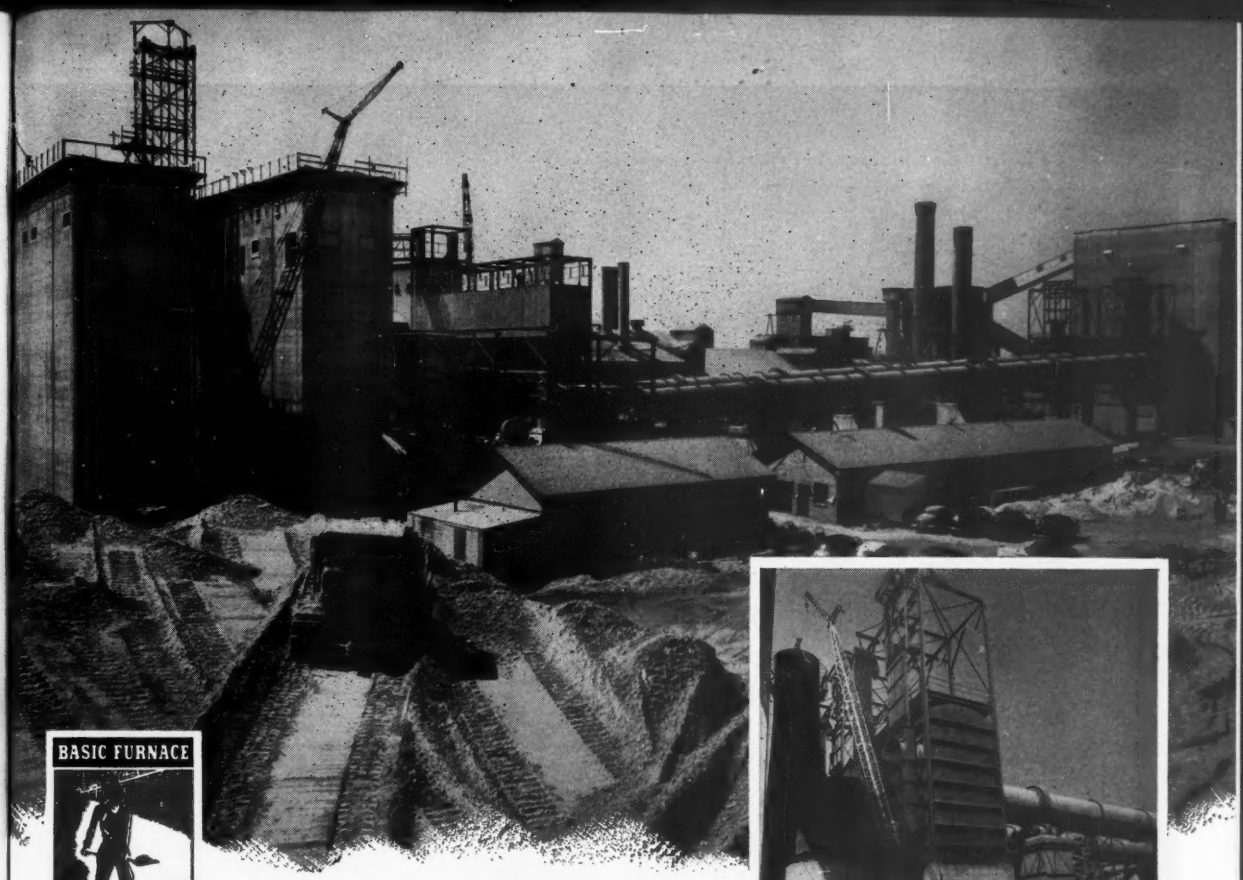
Puzzle Corner

The pool in the May 26 problem can be filled in 4 hours and 48 minutes. First in with that answer were Robert I. Peters of Heil Process Equipment Corp., T. S. Bean of Barber & Ross Co. Inc. and Robert W. Huff of Canton, O.

A grocer attempts to weight out identical amounts of sugar to two customers but his scales are false. The first time he puts the weight in one pan and the sugar in the other, and the second time he reverses the procedure. Does he gain or lose?

Shrdlu

(Metalworking Outlook—Page 53)



BASIC FURNACE REFRACTORIES

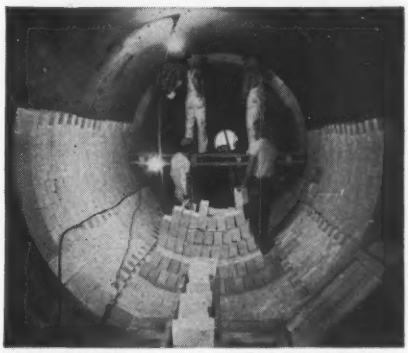
Kiln plant No. 4 as it nears completion. This photograph, taken April 29, 1952, shows kilns in position, finished product buildings under construction (at left) and stacks going up (at right).

Erecting steel sections of stacks that exhaust hot gases from kilns. The stacks, 215 feet tall, will tower 95 feet above the raw storage silo.

D-day for dead-burning

SOON after you read this, dead-burned dolomite will be pouring from these new kilns at our Maple Grove works. Favored by weather and well coordinated schedules, concrete work and installation of kilns and accessory equipment have gone forward with unusual speed.

Kiln plant No. 4 will increase very substantially our capacity for producing dead-burned dolomite. Here we will make Magnefer and Syndolag to the same rigid specifications, by the same controlled procedures that have enabled these fettling refractories to win their reputation for high quality and dependable performance.



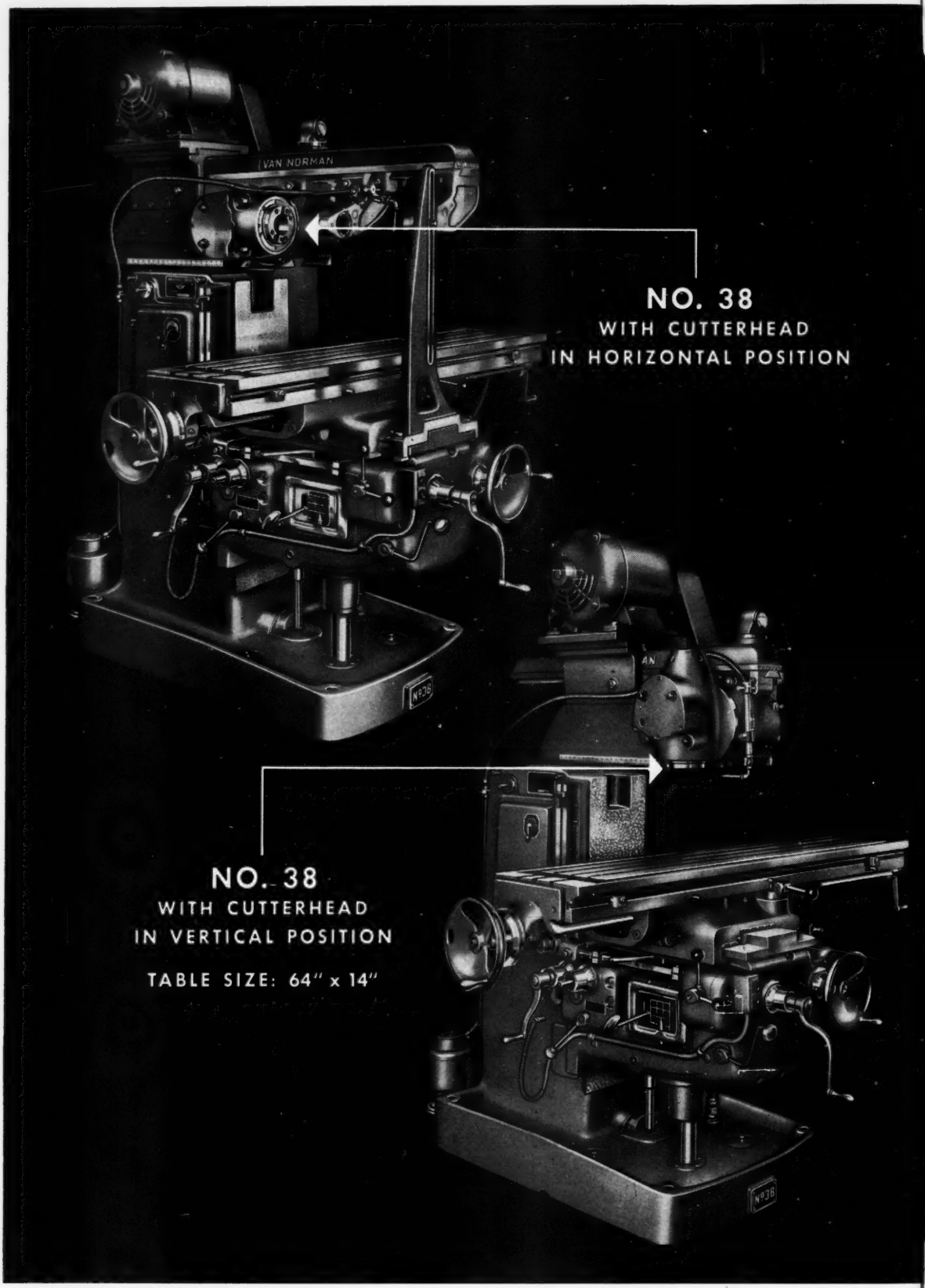
Installing high alumina brick in kiln. Burned basic brick are used in the hot zone in which temperatures above 3000°F are required.

Railroad tracks will soon cross this fill of a quarter million tons to facilitate shipment of dead-burned dolomite and other refractory products.

Basic Refractories Incorporated

845 HANNA BUILDING, CLEVELAND 15, OHIO

Exclusive Agents in Canada: REFRACTORIES ENGINEERING AND SUPPLIES, LTD., Hamilton and Montreal


VAN NORMAN
NO. 38
WITH CUTTERHEAD
IN HORIZONTAL POSITION
NO. 38
WITH CUTTERHEAD
IN VERTICAL POSITION
TABLE SIZE: 64" x 14"

VAN NORMAN

Ram Type Millers Give You

MORE USEFUL WORKABILITY per Machine

The advantage of Van Norman Ram Type Millers is their versatility to meet the daily milling requirements by enabling operators to perform horizontal, angular or vertical milling, using conventional milling practice and standard arbors and cutters, all with one machine.

Not only does this important feature give you the workability of several single machines, but it also minimizes work set-ups . . . cuts idle machine and operator time by permitting you to meet job to job milling requirements as they occur.

In addition, the movable ram in combination with the saddle cross feed increases the work range and capacity of work that can be handled.

Because Van Norman Ram Type Millers enable you to meet all milling jobs, they keep operators and machines working. They cut costs, improve accuracy and increase production.

Write for information and catalog describing Van Norman Ram Type Millers.

VAN NORMAN COMPANY

SPRINGFIELD 7, MASSACHUSETTS

AMERICAN CHEMICAL PAINT COMPANY

AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet

Subject: PROTECTING ALUMINUM WITH ALODINE®

ALODIZING IS EASY AND EFFECTIVE

The Alodizing process is a chemical one and does not require electrolytic techniques or equipment. Alodizing is simple, foolproof, low in cost, and requires a minimum of equipment. Essentially, the process consists of the following easily controlled operations or steps:

1. Cleaning the work
2. Rinsing the cleaned aluminum surfaces
3. Coating with "Alodine"
4. Rinsing with clean water
5. Rinsing with acidulated water
6. Drying

After treatments. Alodized aluminum provides an ideal bonding surface for paint, wax, adhesive, or other organic finishes. These should be applied in accordance with the manufacturer's directions. Unpainted or exposed areas will be protected by the tough, durable "Alodine" surface.

Flight of the Chance Vought Cutlass, seventh in a line of outstanding fighters and "potentially capable" of flying faster than any other service type jet aircraft in production, land or carrier-based. Substantial surface areas of the Cutlass are constructed of painted Alodized aluminum.

SHORT COATING TIMES AND LOW BATH TEMPERATURES

With the "Alodine" bath at its normal temperature of 120° F., coating time by immersion approximates 1½ minutes and by spraying, 15 to 20 seconds. Coating times and bath temperatures can be varied to suit operating conditions.

"ALODINE" MEETS SERVICE SPECIFICATIONS

"Alodine" applied by immersion or spray complies with the rigid performance requirements of both industrial and Government specifications. The following is a list of Service Specifications which "Alodine" meets at the present time.

MIL-C-5541
MIL-S-5002
AN-F-20
U. S. Navord O.S. 675
AN-C-170 (See MIL-C-5541)
U.S.A. 72-53 (See AN-F-20)
16E4 (SHIPS)

"ALODINE" HAS UNLIMITED APPLICATIONS

Parts can be treated by immersion, by spraying in an industrial washing machine, by flow coating, or by brushing. This means that "Alodine" can be used anywhere, on any part or product made of aluminum. This had led to widespread use of the Alodizing process: 1. by fabricators of aluminum products in all industries to assure the utmost in product protection and finish durability; 2. by manufacturers of aluminum who are supplying Alodized aluminum sheets and coils from the mills.

In general, small size products or parts are processed rapidly and conveniently in immersion equipment, which can be mechanized if production volume justifies it. For large production of formed parts, or for Alodizing coiled stock, strip, or cut-to-size sheets, a five-stage power spray washer is most convenient. Airplanes, trucks, trailers, housing, railway cars, bridges and other large units are Alodized in a simple brush-on or flow-coat process.

CHEMICALS ACP PROCESSES

WRITE FOR FURTHER INFORMATION ON "ALODINE" AND ON YOUR OWN ALUMINUM PROTECTION PROBLEMS.

CHEMICALS ACP PROCESSES

STEEL

EDITORIAL STAFF

Editor-in-Chief ..... E. L. SHANER
Editor ..... IRWIN H. SUCH
Managing Editor ..... WALTER J. CAMPBELL
Market Editor ..... WM. M. ROONEY
Engineering Editor ..... WALTER TOERGE
Steel Plant Editor ..... J. D. KNOX
Consulting Editor ..... ALLEN G. GRAY
Art Editor ..... DON S. CADOT

Associate Editors:

FRANK R. BRIGGS, JAY DEEULIS
VANCE BELL, JOHN S. MORGAN
EDWARD C. BIRKNER

Assistant Editors:

WILLIAM R. WOLFE
DOLORES K. MAILLE, M. T. BORGERHOFF
ARTHUR W. ZIMMERMAN, ROBERT E. HALL
JOHN KELSEY, ROBERT O. JAYNES
ROBERT F. HUBER, FLOYD G. LAWRENCE
L. J. SKUDERIN

Resident Editors:

Washington ..... E. C. KREUTZBERG
New York ..... B. K. PRICE, L. E. BROWNE
SAMUEL W. BAKER
Pittsburgh ..... EDWIN L. KARPICK
Detroit ..... H. C. TUTTLE
Chicago ..... E. F. ROSS
London, European Editor ..... VINCENT DELPORT

Editorial Correspondents:

Birmingham, R. W. Kincey; Buffalo, L. G. Feldmann; St. Louis, Mac L. Hutchens; Youngstown, George R. Reiss; Los Angeles, Norman Lynn; San Francisco, Edwin Haverty; Seattle, R. C. Hill; Dallas, C. K. Cates; Toronto, F. S. Tobin; Birmingham, Eng., J. A. Horton; Paris, France, Leon Jaudoin; Liege, Belgium, Jacques Foulon; Dusseldorf, Germany, Herbert Gross.

BUSINESS STAFF

Business Manager ..... J. W. ZUBER

Advertising:

Service Manager ..... C. H. BAILEY
Production Manager ..... A. V. ANDERSON
New York E. W. KREUTZBERG, K. A. ZOLLNER
CALVIN FISHER JR.
Pittsburgh ... S. H. JASPER, H. G. ROWLAND
J. C. SULLIVAN, T. R. WARREN
Chicago ..... L. C. PELOTT, W. L. POLAND
Cleveland ... D. C. KIEFER, H. G. ROWLAND
C. A. TALLINGER, E. L. FRANKE
Los Angeles ..... F. J. FULLER
Griffin, Georgia ..... FRED J. ALLEN

Market Research and Promotion:

Promotion, Research Mgr. ... S. F. MARINO
Market Statistics ..... GEO. J. AUNER
Mail & List Service ..... BETTY HINTON

Circulation Department:

Manager ..... G. R. EBERSOLE
Field Represent. ... H. R. DUNNE, C. A. PRICE

Main Office:

Penton Building, Cleveland 13, Ohio
Main 1-8260

Branch Offices:

New York 17 ..... 60 East 42nd St.
Murray Hill 2-2581
Chicago 11 ..... 520 North Michigan Ave.
Whitehall 4-1234
Pittsburgh 19 ..... 2837 Koppers Bldg.
Atlantic 1-3211
Detroit 2 ..... 6560 Cass Ave.
Trinity 5-3024
Washington 4 ... 1123 National Press Bldg.
Executive 6849
Los Angeles 48 6262 Commodore Sloat Dr.
Webster 1-6865
Griffin, Georgia ..... 331 South 12th St.
Griffin 7854
London, 2 Caxton St., Westminster, S.W. 1

Published by

THE PENTON PUBLISHING COMPANY

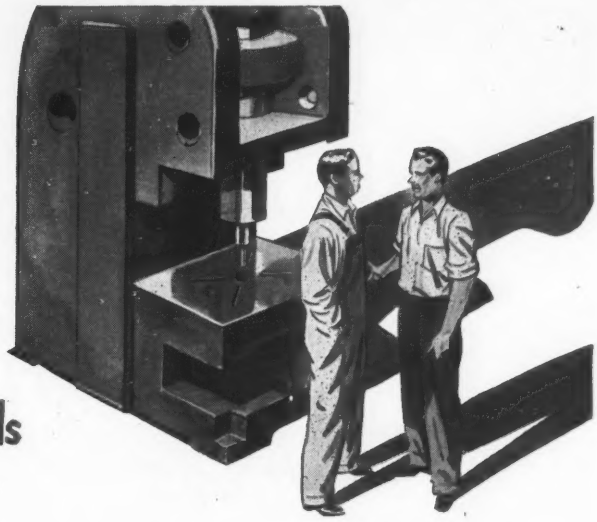
President and Treasurer ..... G. O. HAYS
Chairman ..... E. L. SHANER
Vice Pres. and Secretary ... F. G. STEINEBACH
Vice Pres., Director of Adv. ... R. C. JAENKE
Assistant Treasurer ..... R. W. COLEMAN

Also publisher of

FOUNDRY • MACHINE DESIGN
NEW EQUIPMENT DIGEST

CCA NBP

Member, Controlled Circulation Audit Inc., National Association of Magazine Publishers, Society of Business Magazine Editors, and National Business Publications Inc.



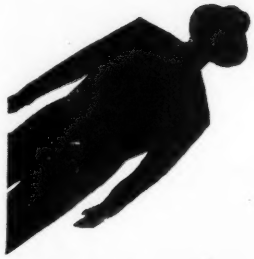
a few words about alloy steels

or... how your alternate steel problems can profit from a Republic Suggestion

Stumped by government restrictions on the alloy steel grades you've been using for years? Faced with the problem of working out machining and heat-treating procedures on alternate alloys... carbon or stainless steel?

Call in the Republic 3-Dimension Metallurgical Service. A Republic Field Metallurgist, backed up by the Republic Mill and Laboratory Metallurgists, will work with your metallurgist to make the switch to alternate alloys easier.

You will be working with the leading producer of alloy steels. We'll gladly use our experience to help you get all the benefits from the alloys now available.

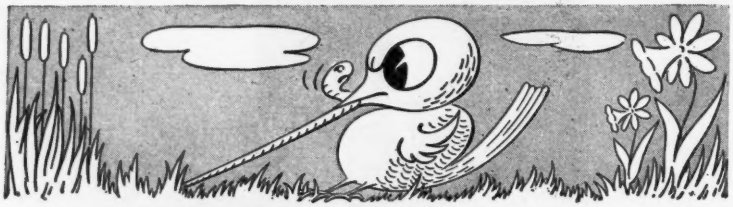


REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

Republic ALLOY STEELS

REPUBLIC STEEL

Other Republic Products include Carbon and Stainless Steels—Sheets, Strip, Plates, Pipe, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing



For the best

spring

every

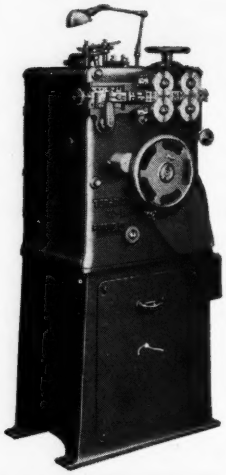
time

see the man with a

Versatile Torrington Spring Coiler

In spring coiling, the words "Torrington" and "Versatile" are synonymous! When you desire springs produced to meet exacting requirements, just call the professional springmaker who has a Torrington coiler. He's the man who can fill your needs with accuracy, speed and economy. On special springs, our sales department will gladly assist you in finding a source of supply, or help your springmaker devise just the right tooling to produce it.

Torrington's 14 different Spring Coilers cover a range of wire diameters from .003" to .750"

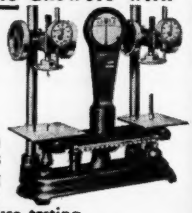


MODEL W-11 SPRING COILER

Wire diam. range: .015" to .072". Length per spring: 0" to 42". O. D. Coil Range: 3/32" to 1 9/16". Produces 23 to 190 springs per minute with variable speed drive. Extra wire feed gears, torsion, other attachments available.

NOW... Spring Makers and Users can get the same answers with

The TORRINGTON SPRING TESTER



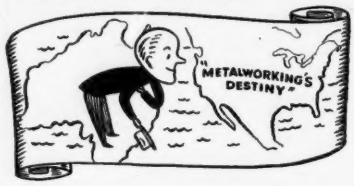
An accurate, uniform and inexpensive means of measuring spring load and deflection! For inspection or in-use testing . . . to aid in designing and developing springs for specific uses or as a basis for statistical quality control. Write today for illustrated bulletin on the Torrington Spring Tester!

The **TORRINGTON** MANUFACTURING COMPANY TORRINGTON, CONNECTICUT

LETTERS

TO THE EDITORS

Heralded in Australia



We were much interested to read your "Metalworking's Destiny" (Jan. 7, p. 115). This is a splendid piece of writing and we would like to congratulate you for it.

Here in Australia our problems are much the same as yours in the United States. Should you publish similar articles, we would greatly appreciate a copy.

John K. Heughan
manager, Herald Research
Melbourne, Australia

• *"Metalworking's Destiny" was reprinted in a number of publications, including the Congressional Record. A few reprints are still available.*

Guide for Tool Steels

Will you kindly advise us the name of the manufacturer of "Champion Nonchangeable Die Steel."

J. M. Brown
director of purchases
Veeder-Root Inc.
Hartford, Conn.

• *It's Crucible Steel Co., New York. That information was contained in* STEEL*'s "Guide for Selecting Tool Steels & Carbides," last published in 1948. A new and revised "Guide" is scheduled to appear in our June 16, issue.*

History of Steel Making

Do you have a chronological history of steelmaking advances with dates and who made them? Even though several people and firms may have contributed simultaneously and independently to the same advance of the art, we would like to use such information with fairness to all concerned.

M. G. Van Voorhis
Ketchum, MacLeod & Grove Inc.
Pittsburgh

• *Data which you desire is included in the book,* Chronology of Iron and Steel, *available from the book department of Penton Publishing Co.*

Cermets: Old Idea New Use

We noticed your mention of Cermets in a recent issue of STEEL (Apr. 21, p. 48 & p. 82) as we have been manufacturing and marketing for a number of years a Cermet refractory protective material. While not an entirely new concept, Cermets are new to industry and we are confident that many manufacturers will have occasion to become much more familiar with this aptly coined word—Cermets.

Frank C. Arrance, president
Cera-Kote, Inc.
Fostoria, O.

American Nickeloid "Pre-plated" METALS CAN BE

STAMPED
BLANKED
DRAWN
BENT
FORMED

IT'S PLATED!

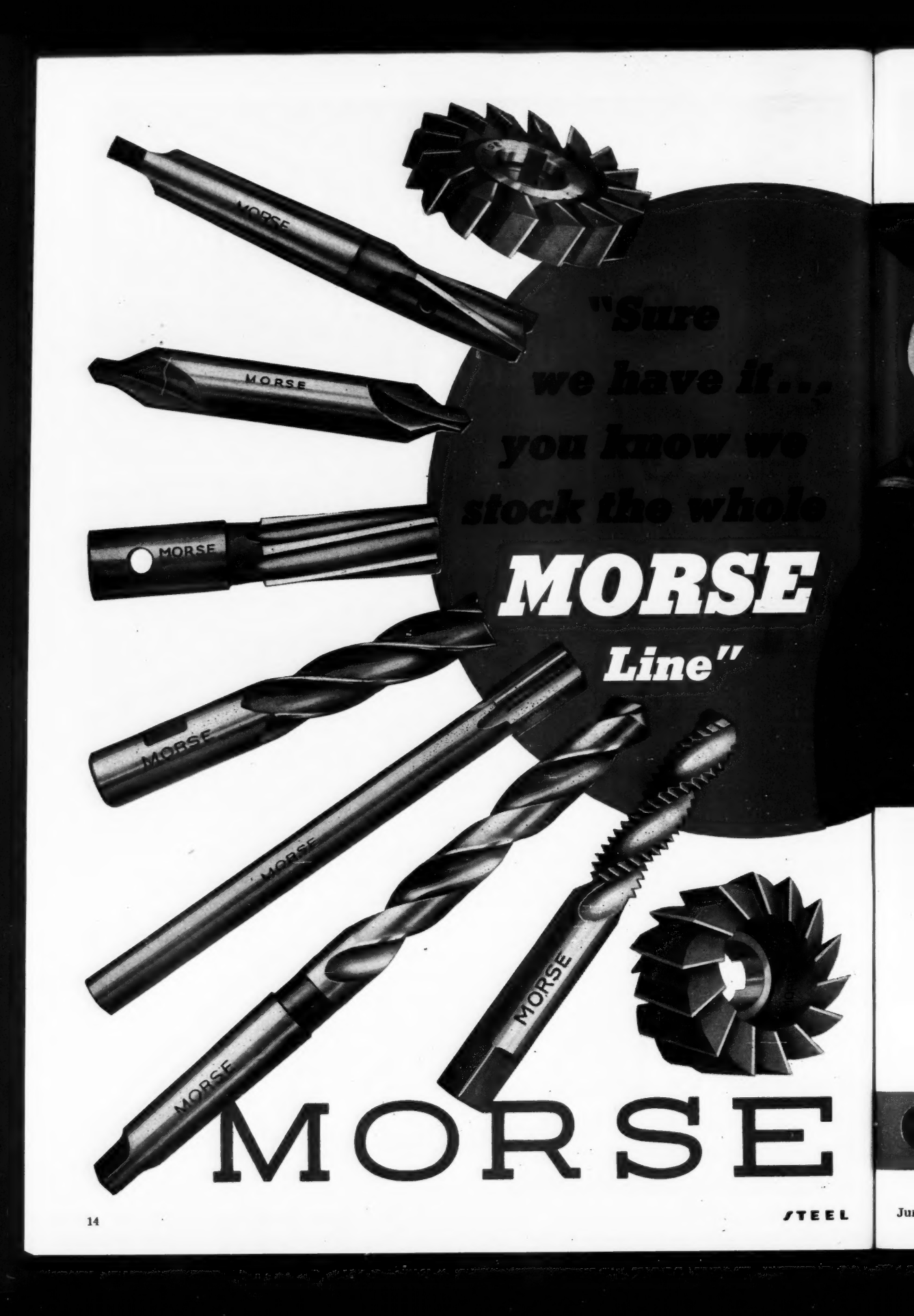
. . . INTO FINISHED PARTS OF THE HANDSOMELY FINISHED PRODUCT

The gleaming, easy-to-keep-beautiful chromium plated metals you see on these kitchenwares are functional in every way. They were already plated when fabricated, simplifying production-line manufacturing, reducing costs. In addition to chromium, we supply finishes of nickel, copper or brass on various basic materials including steel. Dictate a letter *now* . . . ask us for samples, specifications, prices, and details of workability.

NICKELOID METALS (Pre-Plated)

OLDEST AND LARGEST PRODUCERS OF PRE-PLATED METALS

AMERICAN NICKELOID COMPANY
PERU 1, ILLINOIS


"Sure we have it... you know we stock the whole MORSE Line"
MORSE
MORSE
MORSE
MORSE
MORSE
MORSE
MORSE
MORSE

And all Morse-Franchised Distributors' salesmen can say the same, to all customers. For they're backed up with fully maintained distributors' stocks of drills, reamers, taps, cutters, and end mills . . . *the full line of Morse Quality Products.*

That's the *only* way Morse Cutting Tools are sold . . . through Morse-Franchised Distributors.

And this gives *you* the full benefit of an unbeatable combination . . . Morse Quality Cutting Tools, supplied to you by top distributors who *know* Morse Tools, and how to put them to work to make money for *you.* See your Morse-Franchised Distributor *today.*

MORSE TWIST DRILL & MACHINE COMPANY
NEW BEDFORD, MASS.
(Div. of VAN NORMAN CO.)
Warehouses in New York, Chicago, Detroit, Houston, San Francisco

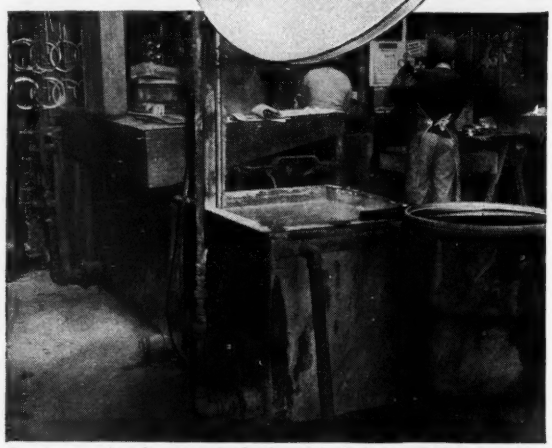
Cutting Tools

. . . buy them by phone from your Morse-Franchised Distributor and save ordering time

ELECTRO-PLATERS COMPANY OF MILWAUKEE

relies on GAS

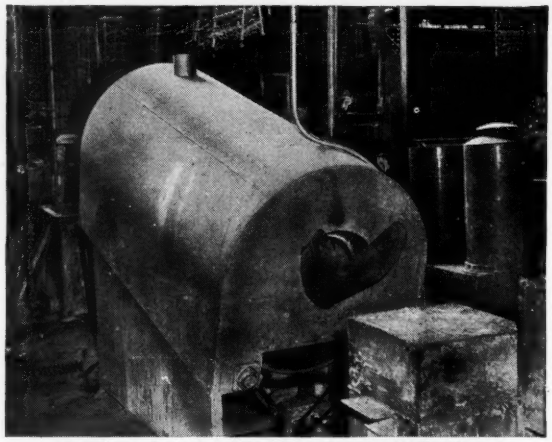
for Efficient, Economical Electro-Plating



Gas immersion burners (at bottom of plating tanks) accurately maintain required plating solution temperatures at Electro-Platers Company, Milwaukee, Wisconsin.

Important factors in the success of the production line technique of plated parts at Electro-Platers Co. are the GAS-fired immersion burners used to heat plating solutions to proper temperatures.

Such diverse items as hub caps, oven door handles, hardware, and dairy industry cylinders are plated in tanks containing Gas-heated solutions. Tanks are fired by Surface Combustion Corporation's 6″ atmosphere burners on immersion tubes. The bulk of the plating is Copper, Nickel, Chromium, Cadmium, and bright Zinc.



Gas-heated rotary-parts dryer speeds production.

ADVANTAGES OF GAS

- **Precise temperature controls maintain exact temperatures.**
- **GAS immersion burners require virtually no maintenance.**
- **GAS burner operation has proved itself economical.**

Throughout Industry, the numerous applications of GAS demonstrate the versatility, economy, simplicity, and efficiency of GAS as an Industrial Fuel. Your local Gas Company Representative can give you the facts about GAS and the advantages of GAS in your production line. Call him today.

MORE AND MORE... THE TREND IS TO GAS FOR INDUSTRIAL PROCESSING

AMERICAN GAS ASSOCIATION • 420 LEXINGTON AVENUE, NEW YORK 17, NEW YORK

START

using CLARK Bulletin 6018 and 6020 Type "CY" Combination Starters which combine a Safety Switch or Circuit Breaker and Motor Starter in one cabinet.

STOP

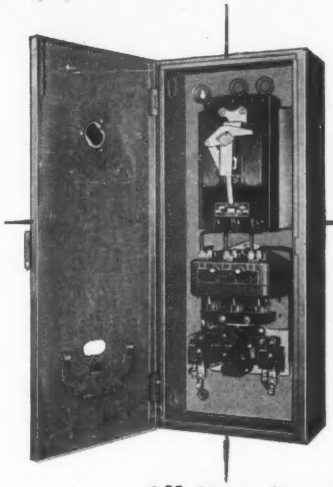
the extra cost of installing and wiring separate Safety Switches or Circuit Breakers with Motor Starters.

START

saving time and insuring production by using CLARK Type "CY" starters for your AC motors.

STOP

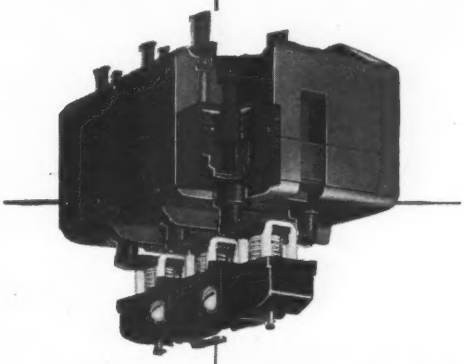
high cost caused by time out for maintenance and repair.

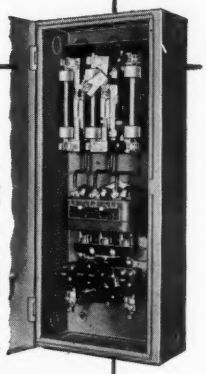


CLARK Bulletin 6020 Size 2 Type "CY" Magnetic Combination Motor Starter with Circuit Breaker.

All New Design

Clark Type "CY" Starters Sizes 2 and 3 are equipped with strong multi-turn magnetic blow-out coils and twin-break contacts. Contacts are of a special silver alloy selected for its high melting point, non-welding and arc-quenching properties. Contacts require no cleaning.





CLARK Bulletin 6018 Size 2 Type "CY" Magnetic Combination Starter with Safety Switch.

CLARK

Type "CY" starters are engineered and built for rugged service—for more time "on the job" and less "time out for repairs and maintenance."

Available in all types of enclosures to meet every industrial requirement.

New Arc Quenching Principle

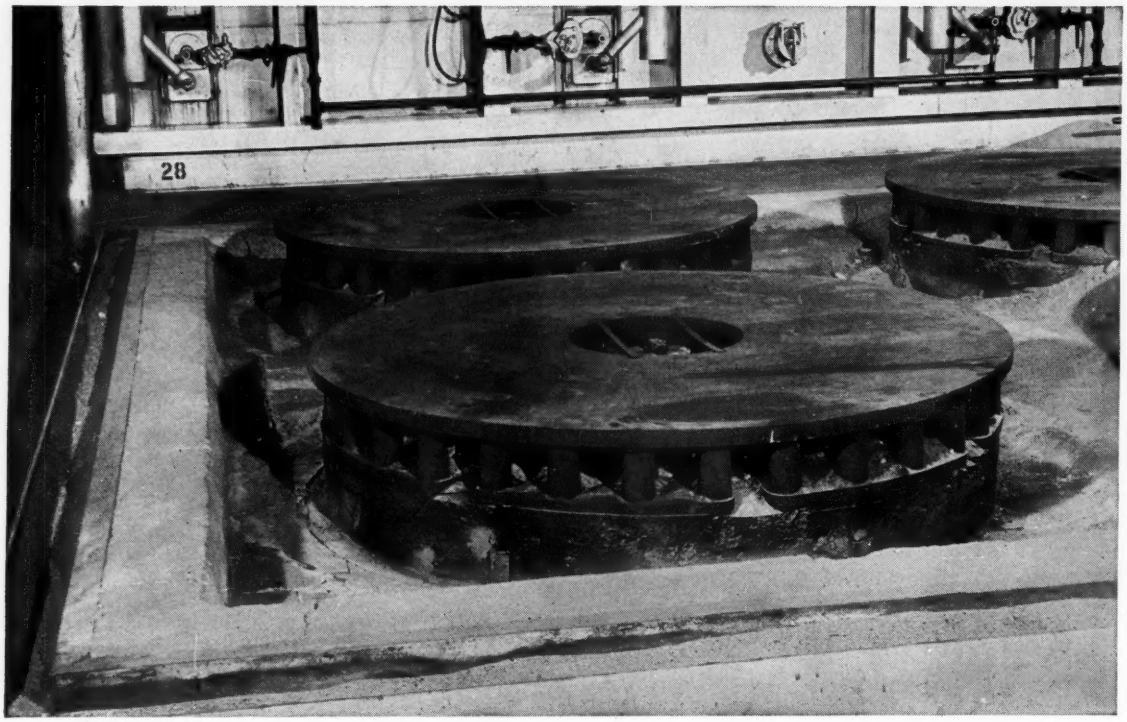
The arc in Type "CY" starters Sizes 2 and 3 is extinguished by the effect of the blow-out coils, *concentric with the contacts*. The steel arc chamber and center stud (colored green in sketch above) form the magnetic field which rotates the arc—either lengthening or confining it. Since the arc moves continuously on the contact surfaces, burning and pitting is minimized and contact life greatly increased.

Let us show you how CLARK "CY" STARTERS assure more continuous production and lower maintenance.

THE CLARK CONTROLLER CO.

ENGINEERED ELECTRICAL CONTROL • 1146 EAST 152ND STREET, CLEVELAND 10, OHIO

SAVE TIME
with low cost Refractory Concrete



A GARY SHEET AND TIN MILL needed 4 new bell-type annealing furnaces. Engineers decided that Lumnite* Refractory Concrete was just what they needed for the 12 load-bearing bases, adjacent floors and curb because of their experience with Refractory Concrete on other jobs.

THEIR DESIGN was simple and efficient. Each base had 2″ of *insulating* Refractory Concrete for the bottom course. Over this was approximately 9″ of Refractory Concrete. Each load base houses a fan and electric motor which is protected from temperatures up to 1800°F by *insulating* Refractory Concrete.

Refractory Concrete did its job so fast that a program is now planned to rebuild 135 more bases with it.

Whether your plant uses bell-type annealing furnaces or not, chances are you can profit by using efficient Refractory Concrete, made with Lumnite calcium-aluminate cement. It is durable under extreme operating conditions and temperatures up to 2600°F. Low volume change in monolithic refractory concrete makes it highly resistant to thermal shock, and it reaches service strength in 24 hours or less!

Use it for furnace door linings, car tops, base pads, heat-resistant floors, metal-stack linings and, of course, there are many other uses.

FOR CONVENIENCE refractory manufacturers package mixtures of Lumnite and selected aggregates that are tailor-made to meet specific temperature and insulating requirements. These castables are sold by refractory dealers. For further information write: Lumnite Division, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

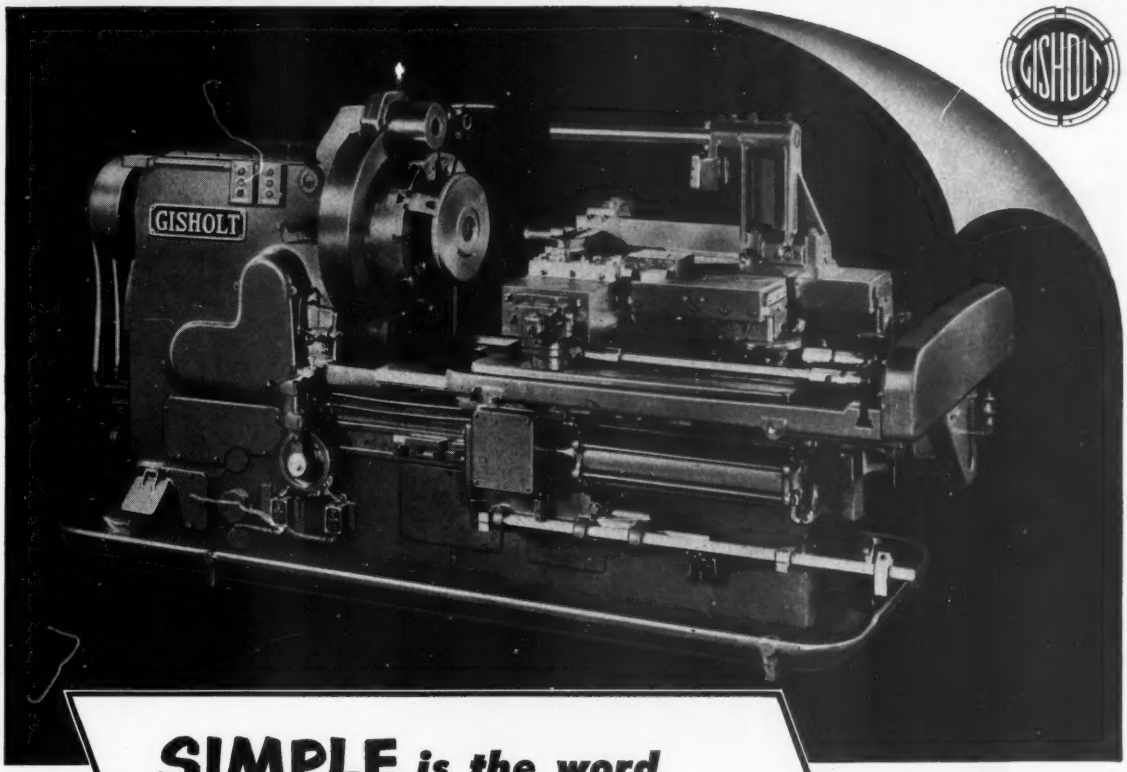
**"LUMNITE" is the registered trade mark of the calcium-aluminate cement manufactured by Universal Atlas Cement Company.*

S-L-49RR

ATLAS® **LUMNITE for INDUSTRIAL CONCRETES**

REFRACTORY, INSULATING, OVERNIGHT, CORROSION-RESISTANT

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries —Sunday Evenings— Sept. To June*

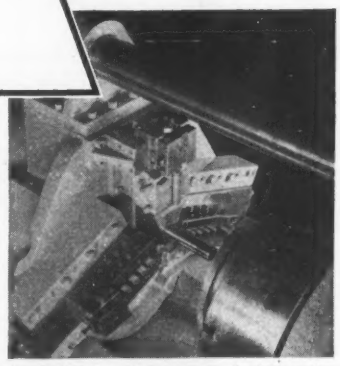


SIMPLE *is the word for the* SIMPLIMATIC!

Wherever you have a sufficient run of similar parts, the Simplimatic Automatic Lathe can solve several of your problems at once.

1. High speed production assures larger output at lower cost per piece.
2. The wide variety of tool arrangements on the large, flat table of the *Platen Type* Simplimatic (shown above) makes it adaptable to a wide range of work.
3. Training time is reduced to a minimum because the entire machining cycle is completely automatic. One operator normally runs several Simplimatics.

The extreme flexibility of the standard Simplimatic can frequently give you all the advantages of a machine designed especially for your job. If you want simple, quick, lower cost production, this is a good time to investigate the Gisholt Simplimatics. Ask for literature.



The *Radial Type* Simplimatic is ideal for machining flywheels, etc., with wide faces and multiple inside and outside diameters. Extreme rigidity permits multiple tooling and maximum cutting speeds, sustained accuracy and excellent life of cutting tools.

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

THE GISHOLT ROUND TABLE
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

TURRET LATHES · AUTOMATIC LATHES · SUPERFINISHERS · BALANCERS · SPECIAL MACHINES

NOW
for delivery* in 1952
a limited number of 5" horizontals (G & L 50-T's)

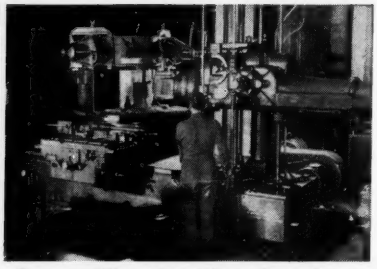
THIS year — if you act soon — you can count on delivery of a famous Giddings & Lewis No. 50-T, Table-Type Horizontal Boring, Drilling and Milling Machine.

You'll find this rugged, multi-purpose machine will bore, drill and mill with equal precision and speed . . . that it will handle hundreds of jobs — large or small, simple or complex. Check the specifications at the right.

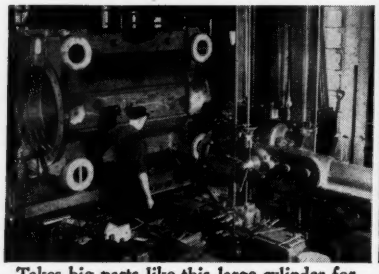
And . . . *if you get your order in soon* because only a limited number are available . . . YOU CAN GET DELIVERY THIS YEAR! See your nearest G&L representative or contact factory direct.

IDEAL FOR OPERATIONS LIKE THESE

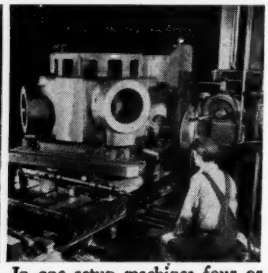
Face milling die bolster block. No pre-layout needed.



Contour milling using right angle attachments, revolving table with power take-off.



Takes big parts like this large cylinder for line boring operations.



In one setup machines four or more sides using revolving table.

GIDDINGS & LEWIS

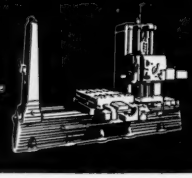
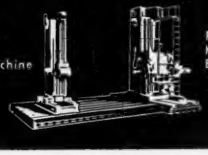
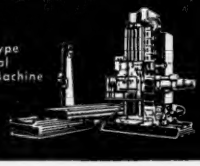


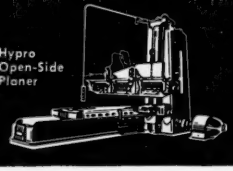
Table Type Horizontal Boring Machine



Floor Type Horizontal Boring Machine



Planer Type Horizontal Boring Machine



Hypro Open-Side Planer

SPECIFICATIONS

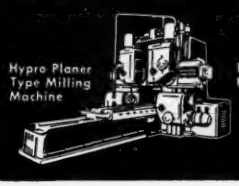
The 50-T is available only with the following specifications

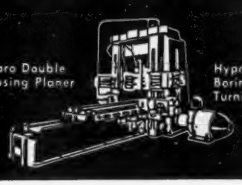
Spindle diameter	5″
Speeds to spindle	24
Range of speeds to spindle	6 to 300 rpm.
Feeds to spindle	24
Range of speeds to spindle	.004″ to .609″
Milling feeds (headstock, table, saddle)	18
Range of milling feeds (in. per rev. of spindle)	.004″ to .609″
Working surface of table	60″ x 96″
Cross travel of table	84″
Working height of column	60″
Length of Bed	120″
Motor	20 hp.

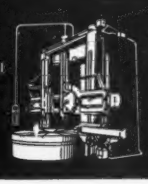
For complete details and specifications on the Giddings & Lewis 50-T see your nearest G&L representative. Ask for Bulletin No. 5.

**Delivery date pertains only to this specific machine and the quotations are subject to prior sale and allocation of priorities as established by N.P.A.*

MACHINE TOOL CO.


Hypro Planer Type Milling Machine

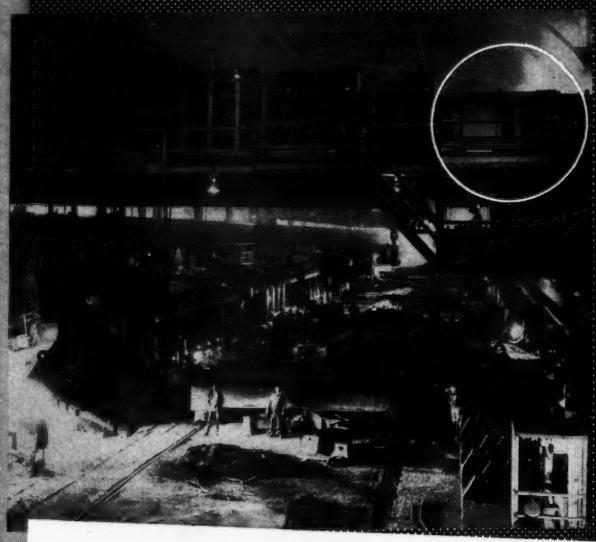

Hypro Double Housing Planer


Hypro Vertical Boring and Turning Mill

G&L HYPRO

FOND DU LAC
WISCONSIN

Large tube manufacturer uses DRAVO crane cab coolers in open hearth operations



CAB TEMPERATURE REMAINS CONSTANT; DUSTS, FUMES, GASES, DIRT ELIMINATED

In open hearth charging operations, crane cab operators are subject to heat from 135° to 150° F., plus such nuisances as dusts, fumes, gases and dirt. To eliminate such unpleasant working conditions, this large tube manufacturer has installed Dravo Crane Cab Coolers on open hearth charging cranes.

Results: cab temperatures constant at 80° to 85° F., winter or summer; healthier workers and more efficient operations.

CRANE CAB COOLERS HAVE LONG SERVICE LIFE, PROVIDE YEAR-'ROUND AIR CONDITIONING

Dravo Crane Cab Coolers are ruggedly constructed, factory assembled and pretested to provide years of satisfactory service. All equipment in the unit is readily accessible with ample space for quick and efficient maintenance.

In the various air conditioning functions the crane cab cooler not only filters the air, removes dust, dirt and fumes, but heats the cab in winter, cools it in summer and provides constant ventilation the year around.

AVAILABLE IN SINGLE UNIT OR IN SPLIT-TYPE UNIT; IMMEDIATE DELIVERY

Dravo Crane Cab Coolers are built in two models—the self-contained unit, mounted close to the cab, and the new split-type unit where the condenser section is mounted on the crane with the evaporator section in the cab.

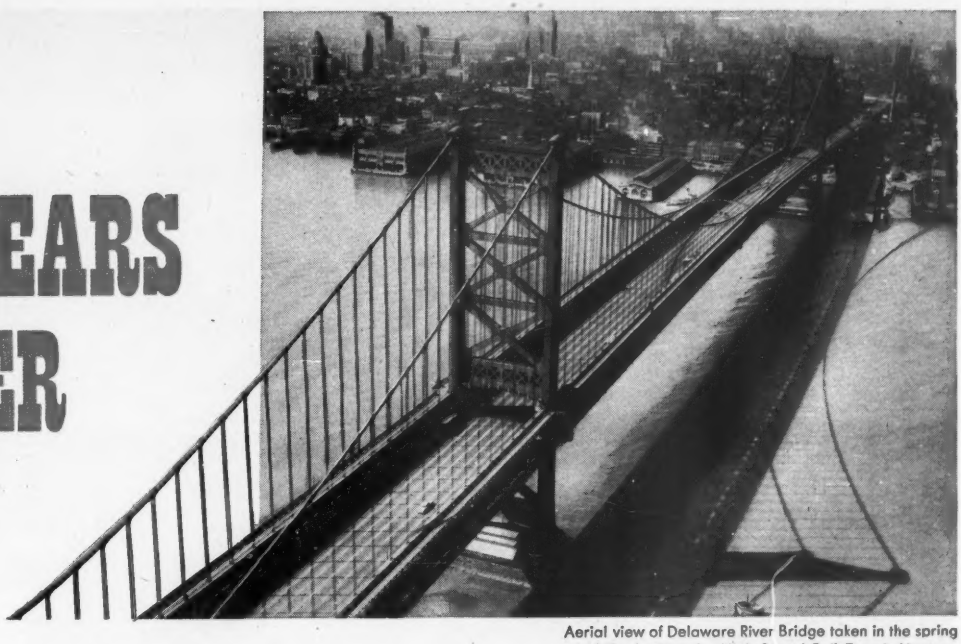
The Dravo Crane Cab Cooler can be easily and quickly installed on any type of crane with a minimum of down-time required. Units are available now!

Write for more information—or phone the nearest Dravo Office and have our representative call on you.

DRAVO
CORPORATION
606 Dravo Bldg., Fifth and Liberty Aves.
Pittsburgh 22, Pa.

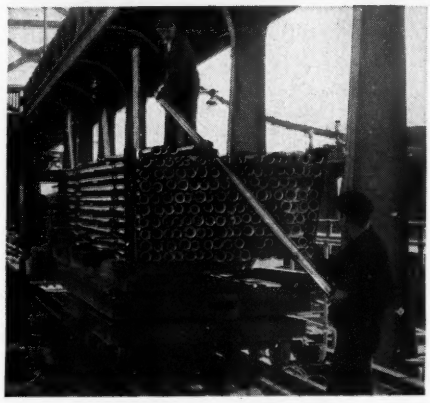
ATLANTA • BOSTON • CHICAGO
CINCINNATI • CLEVELAND • DETROIT
NEW YORK • PHILADELPHIA • ST. LOUIS
WASHINGTON

15 YEARS LATER



Aerial view of Delaware River Bridge taken in the spring of 1952, showing the High Speed Rail Transit Lines on outer sides of bridge. Photo by Aero Service Corporation.

...a report on the service of Everdur Electrical Conduit on the Delaware River Bridge



In 1936, at the time of installation, the Transit Line rails were utilized to transport 20-foot lengths of Everdur Conduit to the cable runways.

The Delaware River Bridge, linking Camden, N. J. with Philadelphia, opened to vehicular traffic in July 1926. In 1934-36, when the High Speed Rail Transit Line was installed, more than 200,000 pounds, or 14½ miles of Everdur* Conduit, in nominal sizes from 1½" to 4", was used for electrification and electro-pneumatic signal operations.

Service conditions were anything but good—and the problems encountered included corrosive industrial gases and almost continual vibration caused by the rapid transit rail cars and 70,000 motor vehicles a day.

Now, with another bridge expansion project planned, an engineer of The American Brass Company made an "on-location" inspection of the 15-year-old installation. The detailed report concludes as follows:

> *"It is my opinion that the corrosion rate of the unpainted Everdur Conduit installed on the Delaware River Bridge is very low, and that the conduit will last as long as the bridge itself."*

Everdur Electrical Conduit is made of Everdur Copper-Silicon Alloy in two wall thicknesses (R.C. and E.M.T.). Publication E-12 describes this ANACONDA Product in detail. For a copy, address The American Brass Company, General Offices, Waterbury 20, Connecticut. 52168

*Reg. U.S. Pat. Off.

wherever corrosion resistance counts ***consider***

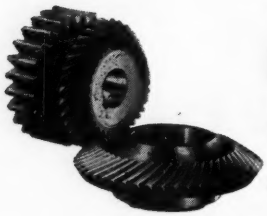
EVERDUR ELECTRICAL CONDUIT

a product of

ANACONDA®

TESTING might mean only cursory examinations or spot checks along the production line. But that is not good testing. Here—at BRAD FOOTE—men with skilled hands using modern precision instruments test constantly, during every step of manufacture. They realize that the responsibility of satisfying you, our customers, rests primarily with them. They know that *"No one shares our responsibility."*

• Our method of testing dimensions, hardness and soundness of metal structures, and smoothness of finish is part of our system of complete control. It means that the BRAD FOOTE gears you buy for use on equipment you sell to others—or for use in your own shop—will give satisfactory service.



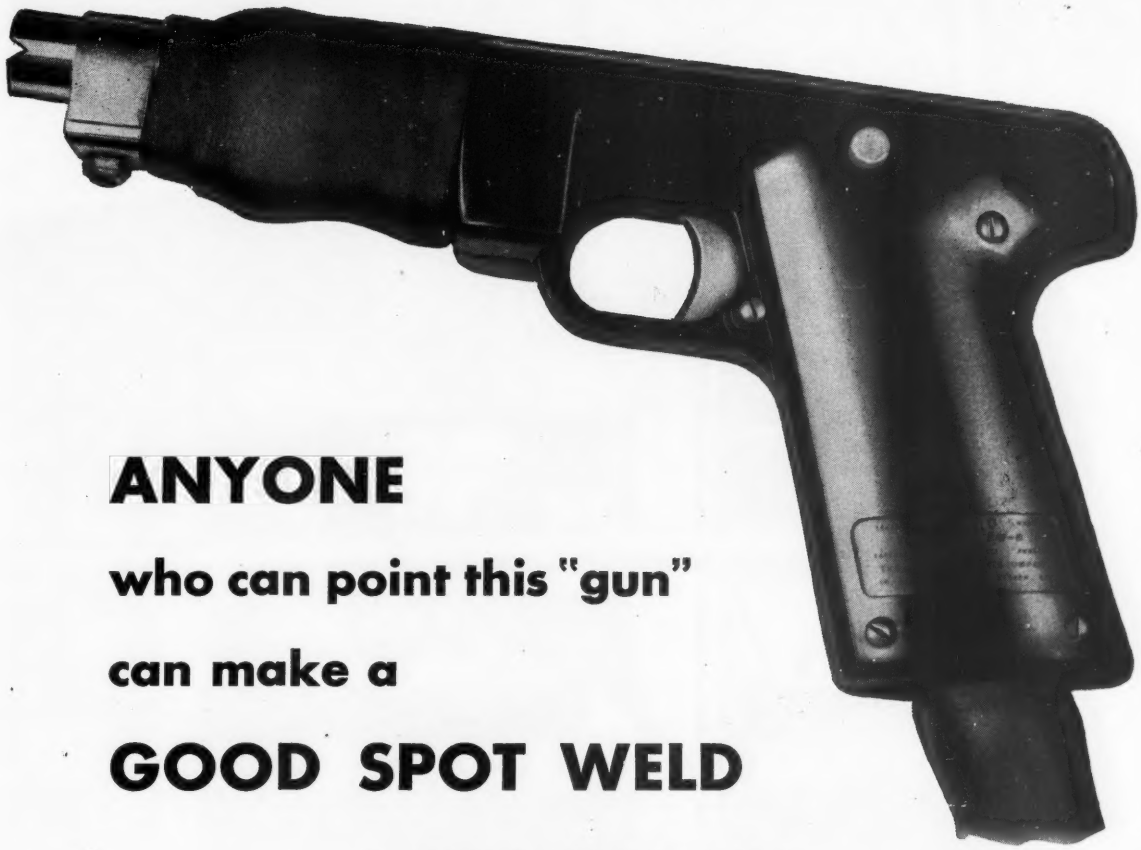
BRAD FOOTE GEAR WORKS, INC.

1309 South Cicero Avenue • Cicero 50, Illinois
BIshop 2-1070 • OLympic 2-7700

subsidiaries

AMERICAN GEAR & MFG. CO. • Phone: Lemont 920 — Lemont, Illinois

PITTSBURGH GEAR COMPANY • Phone: ATlantic 1-9950 — Pittsburgh 22, Pennsylvania



ANYONE

who can point this "gun"

can make a

GOOD SPOT WELD

"HELIARC" HW-8 Pistol-Grip Torch needs no forging pressure...works from one side of sheet... spot welds both STAINLESS and CARBON STEELS

Are you using light gage metals to fabricate large assemblies or irregular shapes? If so, chances are you can simplify many of your joining problems, boost production, and cut costs, too, by spot welding with the HELIARC HW-8 Torch.

The HW-8 joins mild steel, low alloy, or stainless steel .020 to .064 in. thick at one to two seconds per weld. Because it works *from one side of the sheet*, without forging pressure, it makes an easy, one-hand job of spot welding — even in places where resistance welding is not practical or possible.

Connected to a suitable power source with auxiliary timer, the HELIARC Spot Welding Torch makes inert gas shielded welds without fumes, smoke, or spatter. Since operation is automatically controlled, workmen on the assembly line need only press the "muzzle" of the "gun" against the work and pull the trigger. A single hose assembly permits free use of the torch over a 25-ft. radius.

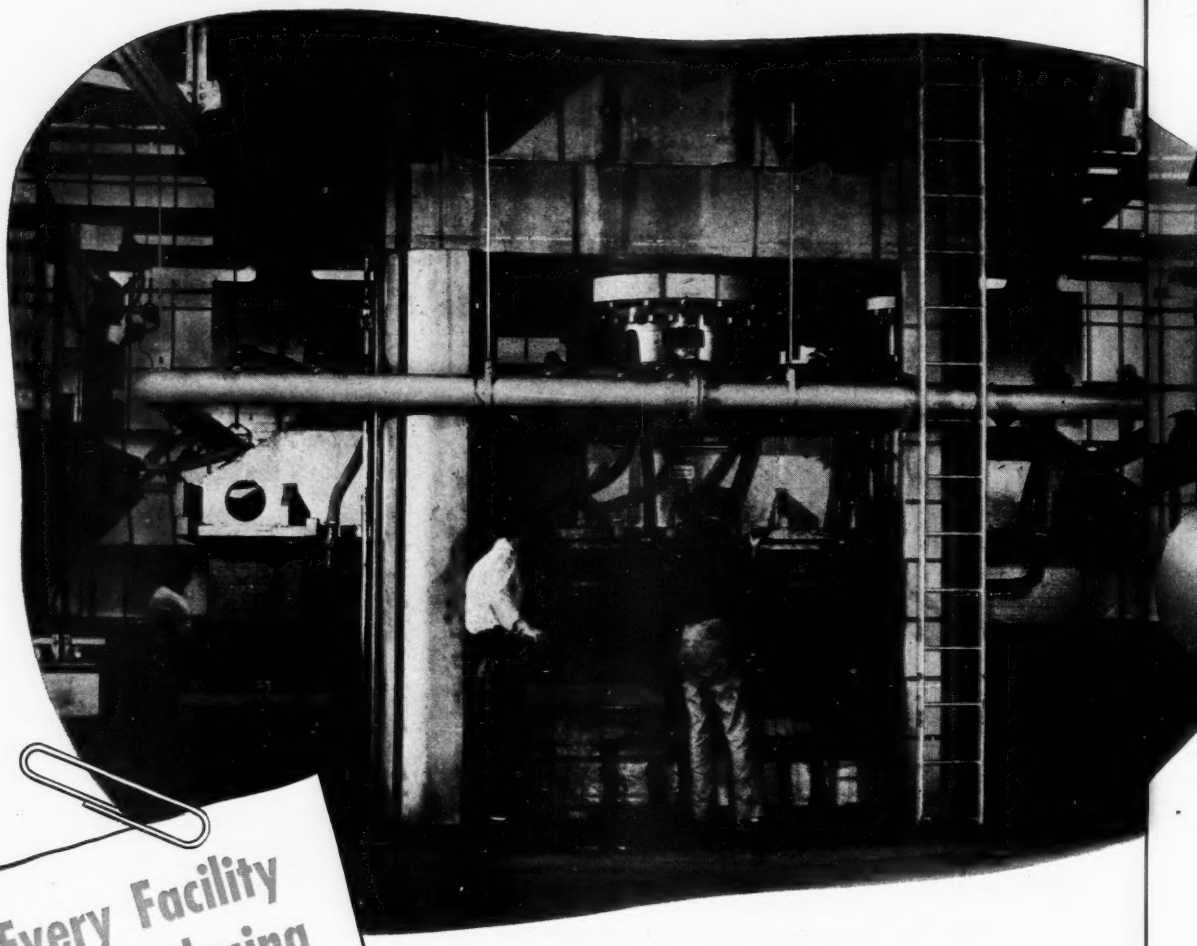
For further information, telephone or write today. LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y.

The term "Heliarc" is a registered trade-mark of Union Carbide and Carbon Corporation.

Linde Trade-Mark

Products and Processes for MAKING, CUTTING, JOINING, TREATING, and FORMING METALS

We've got the equipment...



Every Facility For Producing Armor Plate

Ready to Assemble in Gauges 1/4" to 4" inclusive

Whatever Your Needs—

WE CAN SAVE YOU TIME AND MONEY

Our group of producing subcontracting plants are fully equipped, staffed and prepared to furnish the armor plate you need, when and where you need it. From these strategic locations shipments of flat, formed, fully machined parts can be economically made by overnight truck. You'll save time, and money by checking all your armor plate requirements with us. Write, wire or phone today.

Standard Steel Spring Company

to deliver the goods

LARGE FORMED AND BLANKED PARTS OF

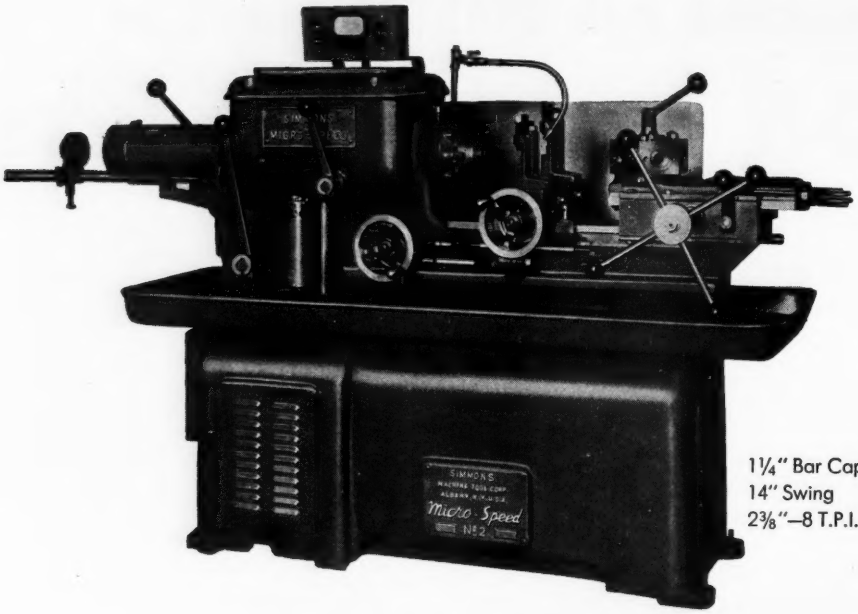
ARMOR PLATE *for Ordnance*

Giant presses, capable of exerting up to 5,000 tons pressure, make short work of forming or blanking complex shapes of heavy gauge armor plate. We give our customers every production assist from engineering the parts through tooling and expediting to final inspection. For a better, speedier, more economical way to turn out component parts for armored vehicles, *turn to us first.*

Large hot formed piece of tank armor—heat treated, fully machined and ready for assembly.

ARMOR PLATE DIVISION • PENOBSCOT BLDG. • DETROIT, MICHIGAN

NOW... an infinite range of reversible speeds by push-button control...



1¼" Bar Capacity
14" Swing
2⅜"—8 T.P.I. Spindle nose

You get quick delivery and low cost with Simmons No. 2 Turret Lathe

If expanding turret lathe production in a hurry is your problem, then look into the Simmons No. 2 Turret Lathe. It's a sturdy, simple-to-operate machine tool that you can use for quantity production of precision parts (for either bar or chucking operations). And because Simmons has used standard assemblies... eliminated complex devices... you can have the No. 2 months ahead of schedule. If your production schedules call for increased turret lathe output, write today for descriptive literature on the Simmons No. 2. We'll send complete details and delivery dates.

SIMMONS MACHINE TOOL CORPORATION
Main Office and Plant: 1755 North Broadway, Albany 1, N. Y.

Check These Outstanding Design Features

Micro-Speed Drive—Gives an infinite range of reversible speeds. You quickly select speed best suited to work and cutting tools since variations are unlimited through range.

Remote Push-Button Control—Speed changes are all by push-button. Operator makes changes from normal position, is guided by tachometer mounted on headstock.

Heavy Cast-Iron Box Frame Bed and Headstock—Assures rigidity for precision bar and chucking operations.

Helical Gears in Headstock—Minimize noise and vibration. Mating pinions are non-metallic.

Power Feed to Turret—Provided by a three-speed gear box, through a worm wheel mounted on the turret saddle.

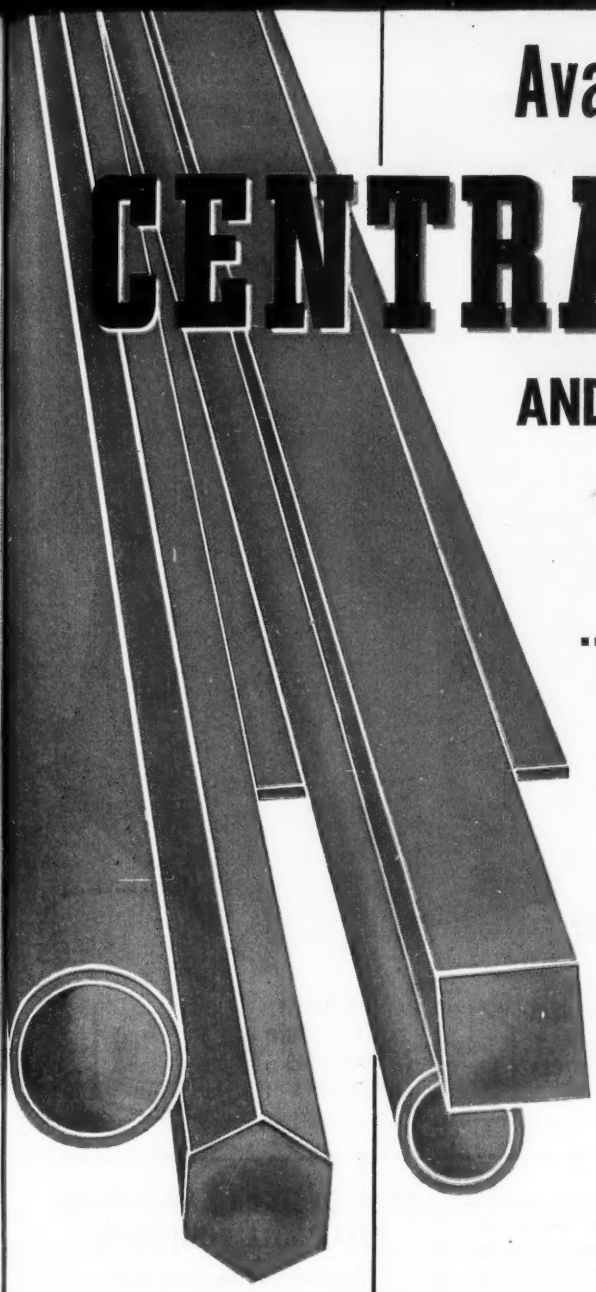
Sturdy Spindle Construction—Opposed Timken anti-friction bearings on head end permit adjustment to compensate for wear.

SIMMONS
NEW AND ENGINEERED-REBUILT MACHINE TOOLS

Available at

CENTRAL STEEL

AND WIRE COMPANY



...Large, Diversified Stocks of *BRASS* and *COPPER*

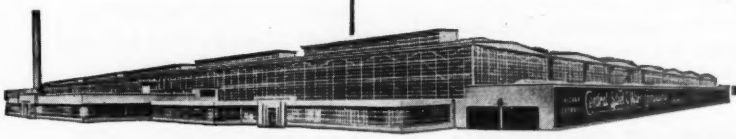
Brass and Copper Products.

Brass, Copper and Bronze Bars, Sheets, Strip, Pipe, Tubes.

Many tempers are in supply in analyses for every type of end use. Precision-cut, -sheared or -slit to meet your *exact* production requirements.

Prompt dependable delivery.

Call one of CENTRAL STEEL'S four strategically located warehouses the next time you need materials—we will welcome the opportunity to serve you.



Hot Rolled • Cold Finished
Carbon & Alloy • Stainless
Copper • Brass • Aluminum
Expanded Metal • Structurals

Central Steel & Wire Company

CHICAGO 80, ILL.
P. O. Box 5310-A
REpublic 7-3000

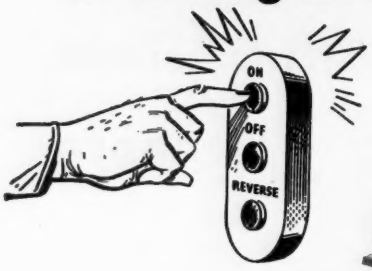
DETROIT 12, MICH.
13400 Mt. Elliott Ave.
TWinbrook 2-3200

CINCINNATI 14, OHIO
Box 148 Annex Sta.
AVon 2230

MILWAUKEE 14, WIS.
6623 W. Mitchell St.
EVergreen 4-7400

Up-End HEAVY STEEL COILS IN 6 SECONDS *Safely*

. . . At the Push of a Finger. . .



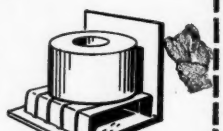
SECO COIL UP-ENDER

UP-ENDS HEAVY COILS OF STEEL FROM VERTICAL POSITION

TO HORIZONTAL POSITION

OR FROM HORIZONTAL POSITION TO VERTICAL POSITION

OR EASILY LOADS AND UNLOADS PALLETS



You eliminate dangerous, time consuming handling when you install a SECO COIL UP-ENDER! Simply load a coil onto the floor level platform by lift truck or crane. Push the electric control button—in 6 seconds the platforms rotate, automatically up-ending the coil! Palleting coils is just as easy. Simply place a pallet alongside the coil and up-end!

Illustrated is the Seco 15,000 pounds capacity Coil Up-Ender. This compact unit has 64" x 64" platforms. An electric motor with a positive mechanical gear-drive rotates platforms 90°. Limit switches automatically stop platforms in proper positions. Heavy-duty design and construction assures long maintenance-free service. Other models built to handle coils from 5,000 to 30,000 pounds capacity.

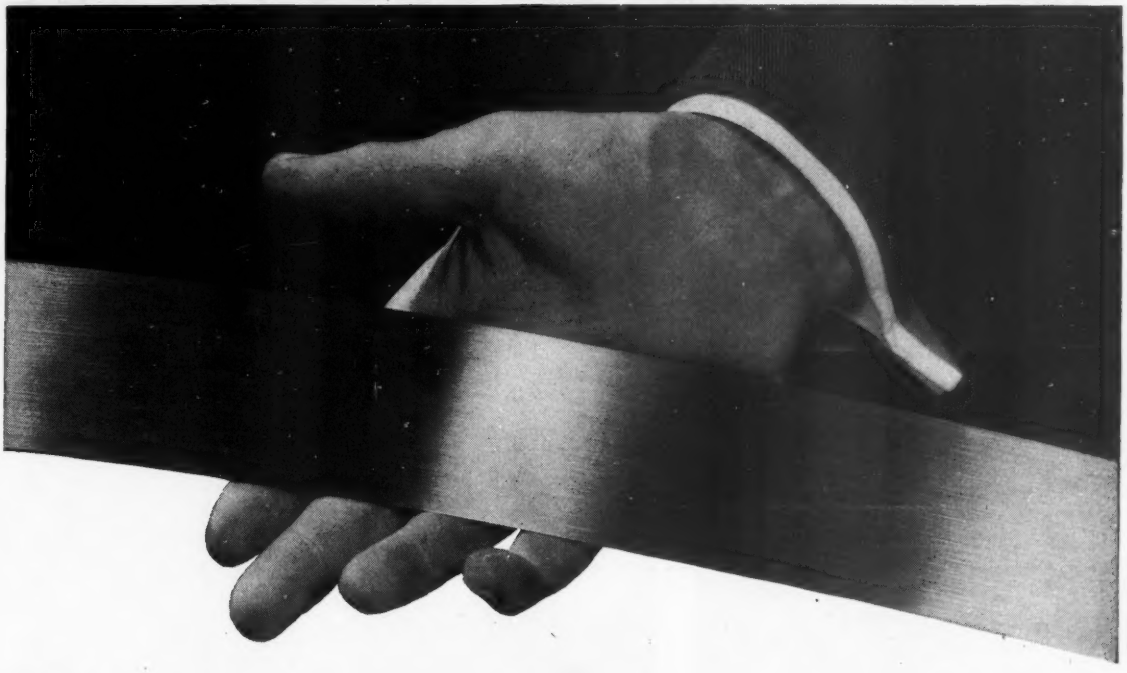
WRITE TODAY FOR COMPLETE SPECIFICATIONS AND OPERATING DATA

SECO DESIGNS AND BUILDS STEEL MILL EQUIPMENT

Leveling and Shearing Lines
Combination Edging and Flattening Lines
Tension Reels for Strip Polishers
Narrow Strip Grinding Machines
Multiple Strand Pull-Out Rolls and Take-Up Frames
Strip Coilers of the Up and Down Coiling Types
Traverse Reels for Narrow Strip
Scrap Ballers

STEEL EQUIPMENT COMPANY
P. O. BOX 737, WARRENSVILLE STATION
CLEVELAND 22, OHIO

SECO



How temperamental can a piece of steel be?

● Plenty! Because steel is one of the most *versatile* of all materials, it can play tricks on you . . . can be mighty temperamental, even obstinate. But, properly controlled, it works for you precisely the way you want it to!

For generations, National-Standard's Athenia Steel Division has specialized in the behavior engineering of high carbon steel for the most exacting services. Here, they've learned how to take the fullest *advantage* of steel's versatility. It results in specially engineered, rigidly controlled steels that do a *better* job in all kinds of products from umbrella ribs and pen points to camera springs and piston rings.

Perhaps defense production brings you new problems in the application or behavior of steel. National-Standard and Athenia offer you the kind of engineering and development service that has speeded production and cut costs for many and many a manufacturer.

NS NATIONAL-STANDARD Company NILES, MICHIGAN

DIVISIONS OF NATIONAL-STANDARD CO.

ATHENIA STEEL	*Clifton, N. J.*	Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD	*Niles, Mich.*	Tire Wire, Stainless, Fabricated Braids and Tape
REYNOLDS WIRE	*Dixon, Illinois*	Industrial Wire Cloth
WAGNER LITHO MACHINERY	*Jersey City, N. J.*	Metal Decorating Equipment
WORCESTER WIRE WORKS	*Worcester, Mass.*	Round and Shaped Steel Wire, Small Sizes

cash...

...or carry?

That is the *important* question. Whether it is better to suffer the expense of old-fashioned wasteful methods of handling materials or to carry materials the modern, efficient way . . . with chain conveyors.

Ridiculous question? Not at all. In too many industrial operations, manual "push-pull-carry" is still adding to operating costs. In others, half-way, intermittent methods are eating into the profit pie.

But, the complete Chain Belt line of conveyor chains can cut costs, improve production, turn over inventories faster wherever your handling problem involves continuous product movement.

Chain conveyors have many advantages. They can be run in any direction, horizontally, vertically, up and down inclines, around curves. They often eliminate the need for wide material movement aisles. They assure a continuous flow of materials along assembly lines. They materially shorten production time per unit and eliminate costly waiting time which usually results from an irregular material flow.

In the complete Chain Belt Company line of conveyor chains and attachments, there is a size and type that will exactly suit your needs. And, for handling ideas and suggestions on the use of chain conveyors, send for your copy of the informative booklet "Build Profits by Cutting Handling Costs." Chain Belt Company, 4660 West Greenfield Ave., Milwaukee 1, Wisconsin.

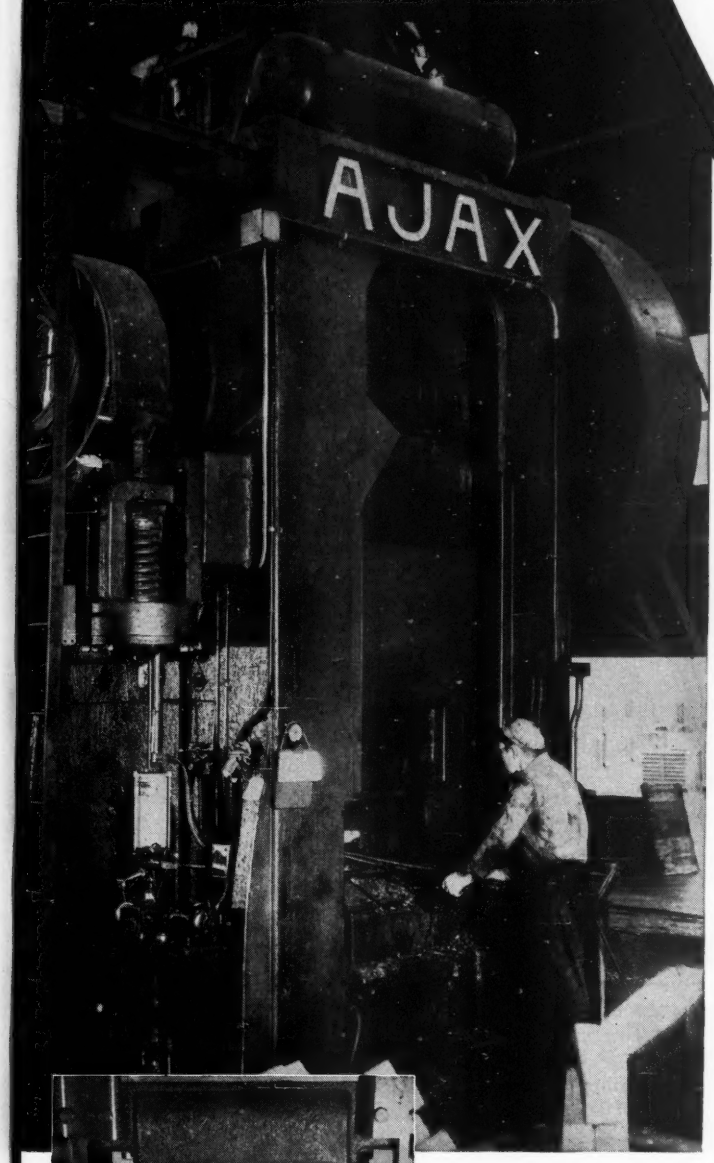
REX

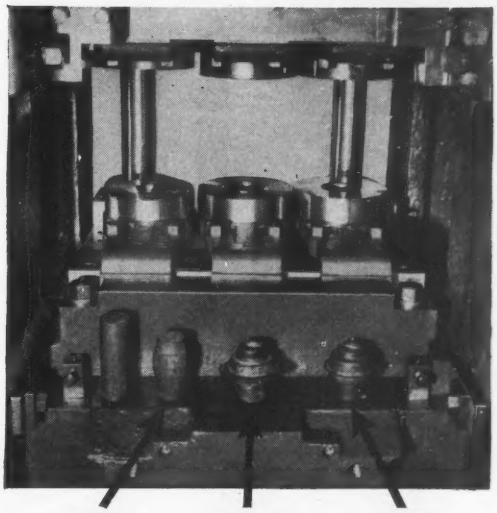
BALDWIN-REX®

Chain Belt COMPANY OF MILWAUKEE

Atlanta • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Dallas
Denver • Detroit • El Paso • Houston • Indianapolis • Jacksonville • Kansas City
Los Angeles • Louisville • Midland, Texas • Milwaukee • Minneapolis
New York • Philadelphia • Pittsburgh • Portland, Oregon • Springfield, Mass.
St. Louis • Salt Lake City • San Francisco • Seattle • Tulsa • Worcester

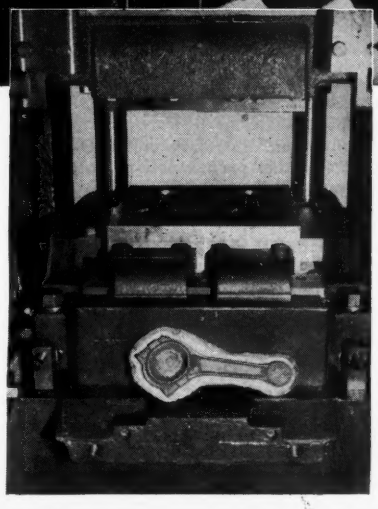
FORGED IN AJAX PRESSES





BUSTER OPERATION | FINISHED FORGING | BLOCKER OPERATION

The progressive forging operations necessary for forming gear blanks for heavy trucks are shown in the foreground. Above, the dies mounted in a 1600 ton press, are in the following order: buster die on the left, blocker die on right and the finish forge die in the center. Each operation is shown in front of the die it is formed in.



Shown here are the dies and bolsters mounted in a 1600 ton press. The product, a heavy automotive connecting rod, is pictured in the foreground.

WRITE FOR BULLETIN 75 B

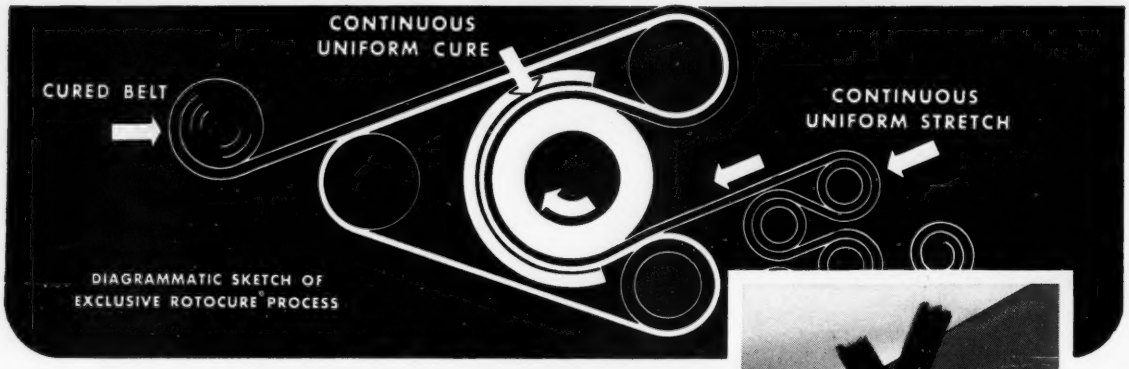
THE Ajax MANUFACTURING COMPANY

EUCLID BRANCH P. O. CLEVELAND 17, OHIO

1105 DEARBORN ST. CHICAGO 3, ILLINOIS

DEWART BUILDING NEW LONDON, CONN.

For Continuous Operation



Buy a Belt that's Continuously-made

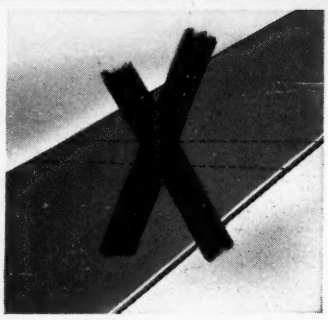
(Rotocured BWH Conveyor Belts have no OCS*)

Belts made by the conventional flat press method of "start and stop" curing tend to fail early because segments are *overcured.* Here's how it happens: A section is cured. STOP. Another section is cured. STOP. Part of the first section is cured *a second time* because the belt is advanced less than a full press length. This part of the belt becomes a weakened structure about 2" to 4" wide. These press overlaps occur *every 30' to 40'!*

The "cure" for this problem is *avoid overcuring* — and that's exactly what Rotocure avoids with its *continuous* endless technique of curing. BWH Rotocured belts thereby give users the following *specific* advantages:

1. **Increased belt flex life (up to 40%).**
2. **Elimination of mechanical distortion at the press ends.**
3. **Constant, uniform stretch.**
4. **Uniform, abrasion-resistant covers.**

Your BWH distributor knows belts and can give you real help on your conveyor problems. Ask him for the full dollars and cents story on ROTOCURE and you'll see how your per ton costs can drop in materials conveyed. Check with him on BWH Transmission Belts too — there's another cost-saving story through operation at lower tensions.



***Overcured Sections — present every 30' to 40' in all belts made by flat press method.**

BWH
DEPENDABLE RUGGEDNESS

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Warehouse Stock: 111 N. Canal St., Chicago, Illinois **Distributors in all Principal Cities**

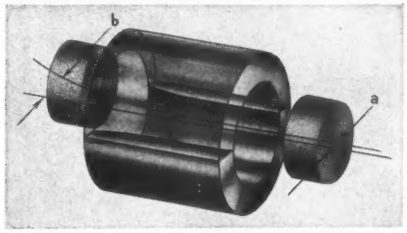
PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.

What's in Vermont this month?

Bell mouth holes are a common internal grinding error. General available information advises simply turning the workhead or changing the length of traverse to correct this error, to generate a straight hole. In the case illustrated, where bell mouth exists at one end of the hole, neither turning the workhead nor changing the length of stroke will correct this error.

In order to grind a straight hole the wheel must traverse the work in a straight line parallel to the axis of the work. The wheel path (the line in which the wheel traverses) is controlled by the slides under the wheelhead. If the slides are straight and true, the wheel path will be a straight line. If the path of the wheel varies from a straight line, the variation will be generated in the work.

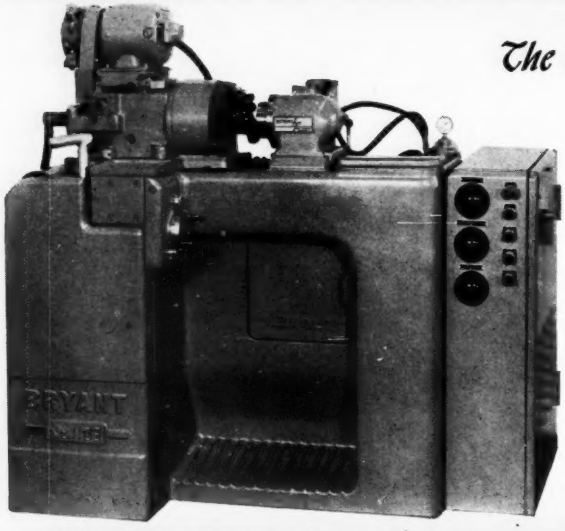
At point "a" the wheel path and axis of the work are parallel and the wheel is set to grind a fixed size of straight hole. Because of an error in the wheelslide ways, the wheel path is distorted and the wheel is plunged into the back end of the work and the wheel path and work axis diverge as shown at point "b". Wheelslide error can introduce distortion of many types within the work in addition to the one illustrated. The only possible remedy is to correct the wheelslide ways which will, in turn, straighten the wheel path.



Wheel contact will be improved, resulting in better finish. Bryant internal grinders are engineered to permit adjustment which will bring the wheelslide ways into proper alignment.

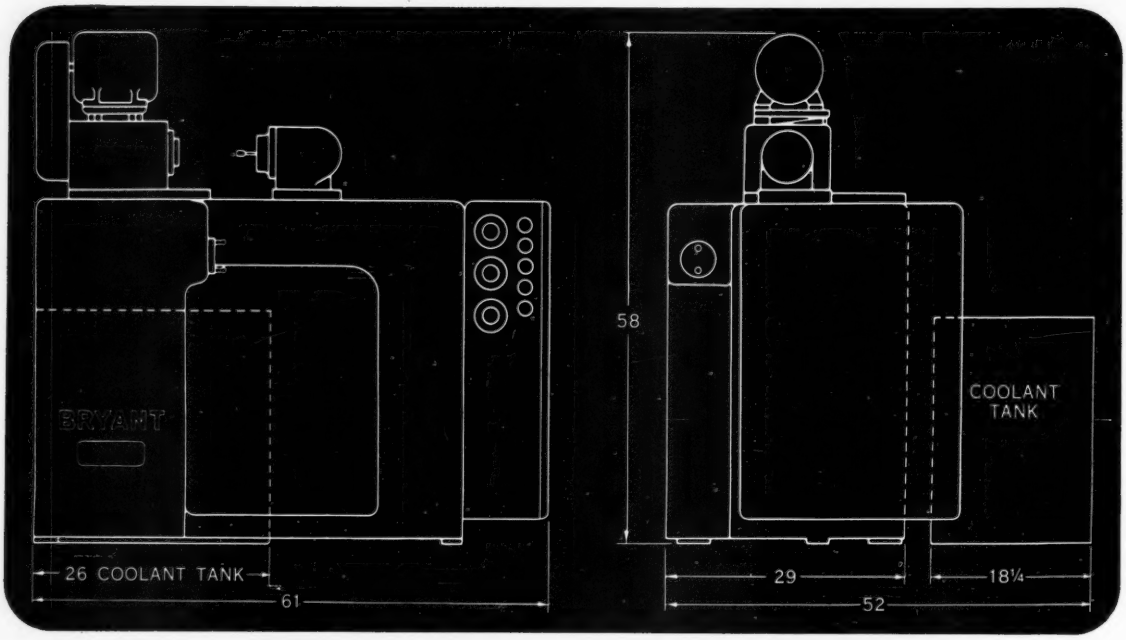
Bryant Chucking Grinder Company in Springfield, Vermont, U.S.A.

FOR HOLE GRINDING

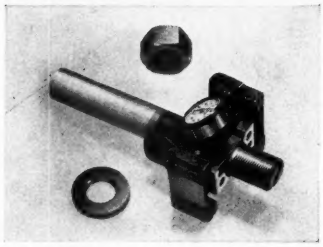


The Bryant 1109 Precision Internal Grinder

This semiautomatic machine is designed especially for grinding small bores. Although intended primarily for bore diameters of less than 1", it has a chuck swing of 9" and a maximum grinding stroke of 3½". By using preloaded bar slides for both cross and longitudinal slide movements, sensitivity is obtained without loss of rigidity. These rigid slides transmit the operating load directly to the base of the machine. The Bryant Hi-Frequency Wheelhead, providing speeds up to 100,000 R.P.M., is furnished as standard equipment to assure efficient surface speeds on the wheels necessary for grinding small bores. Write for further information.



FOR CHECKING INTERNAL THREADS



The Bryant Portable Thread Gage

This is basically a split plug gage. Segments are collapsed and inserted into threaded hole. When expanded, they contact all threads. A partial turn of gage gives accumulated reading of P.D. form and lead on dial indicator — for the first time allowing parts to be sorted into known classifications for fit. *4 to 5 times faster than plug gaging!* Standard range from 5/16" to 1" I.D. Write for complete details.

Bryant Chucking Grinder Company in Springfield, Vermont, U.S.A.

"Tycol Angrove Cutting Oils keep automatics working at peak performance"

Correct – 100%! Tycol Angrove Cutting Oils withstand high speeds and temperatures . . . yet keep tools working with minimum regrinding. They control build-up on cutting edges. Tool life is lengthened and freer cutting made possible. Furthermore, down time for automatics, turret lathes, and similar machines is reduced.

Your nearest Tide Water Associated Office will give you complete data. Call or wire today.

SEND FOR A FREE COPY OF "TIDE WATER ASSOCIATED LUBRICANIA"

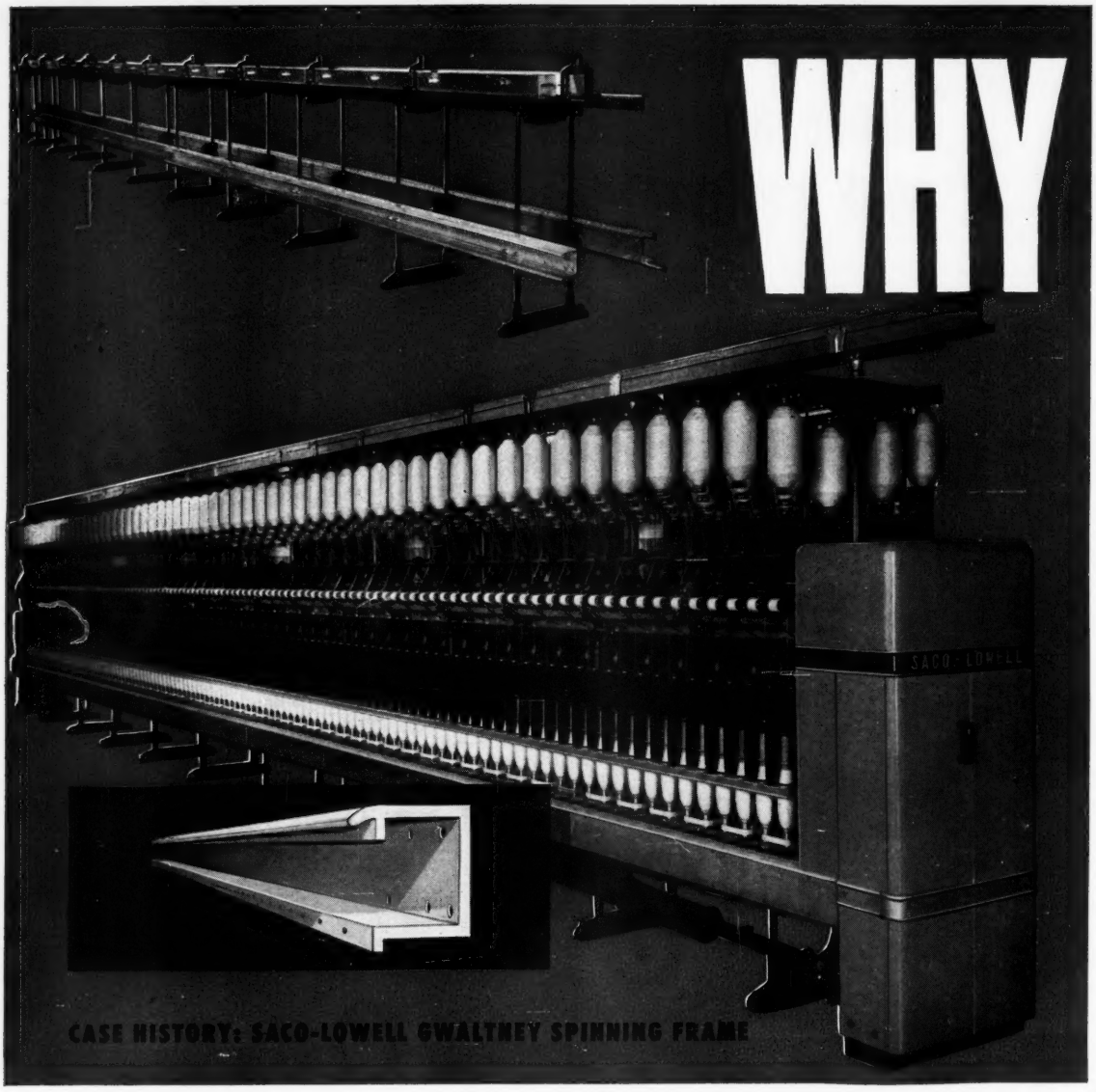
TYCOL

INDUSTRIAL LUBRICANTS

Boston • Charlotte, N. C. • Pittsburgh
Philadelphia • Chicago • Detroit
Tulsa • Cleveland • San Francisco

TIDE WATER ASSOCIATED OIL COMPANY

17 BATTERY PLACE - NEW YORK 4, N.Y.



Superior speed, efficiency and economy are prime features of the new Gwaltney—the radically different spinning frame that combines the many advantages of strong, light weight aluminum with seven years of careful planning by the Saco-Lowell Shops, Biddeford, Maine.

Approximately 1500 pounds of aluminum is used in this advanced spinning frame . . . nearly 800 pounds of extrusions, 500 pounds of die castings, 200 pounds of sheet. The spindle rails, made of aluminum extrusions weighing over 525 pounds, are typical of the many places where aluminum effectively replaces parts formerly made of other metals. These rails, along with other key parts, are more easily and quickly manufactured thanks to the flexibility that aluminum provides in fabricating methods.

Aluminum's light weight pays off, too, in the new Gwaltney Spinning Frame. Floor loads are reduced and light aluminum ring rails give power savings and smoother reciprocating motion. Aluminum sheet cover plates provide completely closed box sections for greater rigidity and minimum vibration. Aluminum parts can't rust, can't stain fibers.

Progressive thinking may call for consideration of aluminum in your operations because whether you're concerned with zippers or spinning frames, door hinges or trailer bodies—chances are aluminum can speed production, increase capacity and lower costs for you!

LET ALUMINUM SERVE YOU, TOO

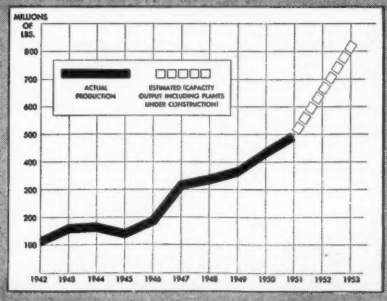
ALUMINUM?

...because it has an ideal combination of advantages found in no other metals!

More aluminum is being specified in designs today because aluminum improves products and increases sales. Let Reynolds Aluminum Specialists help your designers and engineers get maximum benefits from this modern metal. Remember, only aluminum gives you . . .

- ★ **Lightweight with great strength**
- ★ **Consistently low cost**
  (now less than before World War II)
- ★ **Natural resistance to rust and corrosion**
- ★ **Ease of fabrication by modern methods**

STILL MORE ALUMINUM COMING



The expanding primary aluminum production of Reynolds Metals Company . . . a historic chapter in the company's 33 years of continuing growth. And primary supplies of aluminum ore are ample for generations.

To the man in charge of production

Acquaint yourself with accepted techniques for fabricating aluminum. Write on your letterhead for aluminum fabrication books listed at right. On special problems consult with Reynolds staff of aluminum specialists. Reynolds Metals Company, 2520 South Third Street, Louisville 1, Kentucky.

Yours For The Asking . . .

REYNOLDS TECHNICAL BOOKS

(please request on business letterhead)

- A-B-C's of Aluminum
  (from mine to finished products)
- Aluminum Data Book
  (Aluminum Alloys and Mill Products)
- Aluminum Structural Design
- Designing with Aluminum Extrusions
- Fastening Methods for Aluminum
- Finishes for Aluminum
- Forming Aluminum
- Welding Aluminum
- Machining Aluminum Alloys
- Heat Treating Aluminum Alloys
- Metals Weight Slide Rule

Complete index of all technical literature and films on aluminum design and fabrication also available.

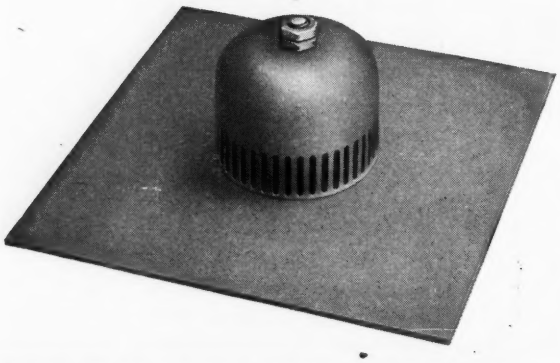
REYNOLDS ALUMINUM

REYNOLDS METALS

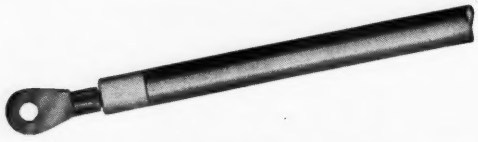
MODERN DESIGN HAS ALUMINUM IN MIND

"MANY TIMES LONGER LIFE FOR EQUIPMENT ON H_2SO_4 JOBS"

report users of *Carpenter* STAINLESS NO. 20...



Fractionating tower parts can stay on the job longer *without replacement* when they are made from Carpenter Stainless No. 20.



Immersion heating unit with a sheath of Carpenter Stainless Tubing No. 20 stands up under almost continuous attack by *sulphuric, nitric, formic and other acids.*

In sulphonation or other processes which cause the formation of sulphuric, formic, acetic and other highly corrosive agents, Carpenter Stainless No. 20 is increasing equipment life from two to twenty times.

Where an essential process must keep going, with minimum interruption for equipment maintenance or replacement, this relatively new wrought Stainless Steel may be your answer.

Similar in analysis to "Durimet 20", Carpenter Stainless No. 20 is produced in the forms of tubing, pipe, sheet and plate. Bar stock, wire and strip are produced by the Carpenter mill at Reading, Pa.

New 16-Page Book of Technical Data

For complete information on No. 20 and the jobs it can do, write us a note on your company letterhead and ask for the new Carpenter Stainless No. 20 book. If you now have a typewritten bulletin about No. 20, replace it with this new book.

THE CARPENTER STEEL CO.
Alloy Tube Division • Union, N. J.

Export Department: The Carpenter Steel Co.
Reading, Pa.—"CARSTEELCO"

Carpenter

STAINLESS NO. 20

Licensed under patents of The Duriron Co., Inc.

STOP RUST! with RUST-OLEUM®

The Practical Coating!
Beautifies As It Protects!
In All Colors, Aluminum and White!

Cut maintenance costs. Apply RUST-OLEUM directly over rusted surfaces without removing all the rust! Just wirebrush and use sharp scrapers to remove rust scale and loose particles, then apply by brush, dip, or spray. Costly sandblasting and chemical precleaning are not usually required. Specify RUST-OLEUM for every rustable metal surface. Prompt delivery from Industrial Distributors in principal cities.

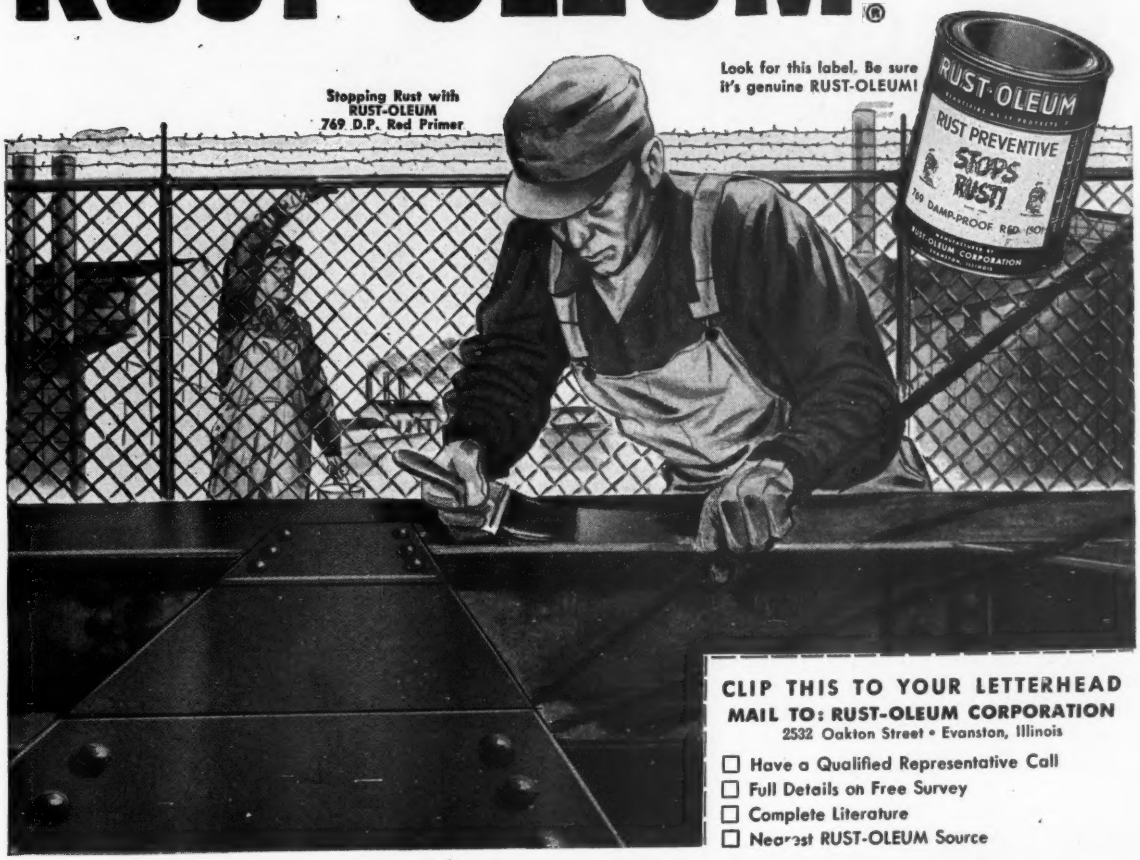
RUST-OLEUM CORPORATION
2532 Oakton Street, Evanston, Illinois

FREE SURVEY: A RUST-OLEUM specialist will gladly survey your rust problems. He'll make specific tests and recommendations. No cost or obligation. See Sweets for complete catalog and nearest RUST-OLEUM distributor, or write for literature on your company letterhead.

Protects Tanks, Girders Fences, Stacks, Metal Sash, Roofs, Buildings, Marine and Railroad Facilities

Look for this label. Be sure it's genuine RUST-OLEUM!

Stopping Rust with RUST-OLEUM 769 D.P. Red Primer



CLIP THIS TO YOUR LETTERHEAD
MAIL TO: RUST-OLEUM CORPORATION
2532 Oakton Street • Evanston, Illinois

- ☐ Have a Qualified Representative Call
- ☐ Full Details on Free Survey
- ☐ Complete Literature
- ☐ Nearest RUST-OLEUM Source

A NEW SIZE!

43 H.P.

DODGE TORQUE-ARM

The Speed Reducer that saves you real money!

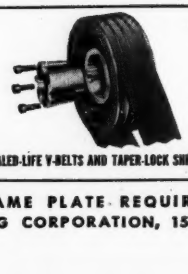
Here it is—the big size that enthusiastic Torque-Arm users have been asking for! Engineered for the same dependable performance and same economy that have made Dodge Torque-Arm Speed Reducers a nation-wide sensation.

- The new "big brother" of the famous Torque-Arm family. Double reduction. 43 hp capacity. Output speeds from 12 to 110 rpm.
- Rugged. Dependable. *Economical.* No special engineering required. No foundation to provide. No flexible couplings. No "lining up" difficulties. No expensive installation.
- Stock TAPER-LOCK sheaves prescribed for each job provide desired speeds. Application to other machines is practical and easy.
- Unit is driven through any V-belt drive. A torque arm, fastened to any fixed object, anchors the reducer unit. Turnbuckle provides fast and accurate adjustment of belt tension.
- Backstop available from stock when required. Easily installed. Sealed and lubricated inside reducer housing.
- Dodge Tri-Matic Overload Release, which provides positive protection for driven machines both mechanically and electrically, is available from stock.
- Dodge Torque-Arm Speed Reducers are built in two series—Single and Double Reduction. Eleven sizes in all, with capacities from 1 to 43 hp and output speeds from 13 to 333 rpm. All available from distributors' stocks.
- WRITE for special Torque-Arm bulletin.

DODGE MANUFACTURING CORPORATION
4400 Union Street • Mishawaka, Indiana

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new cost-saving methods. Look for his name under "Power Transmission Equipment" in your classified phone book.



SEALED-LIFE V-BELTS AND TAPER-LOCK SHEAVES

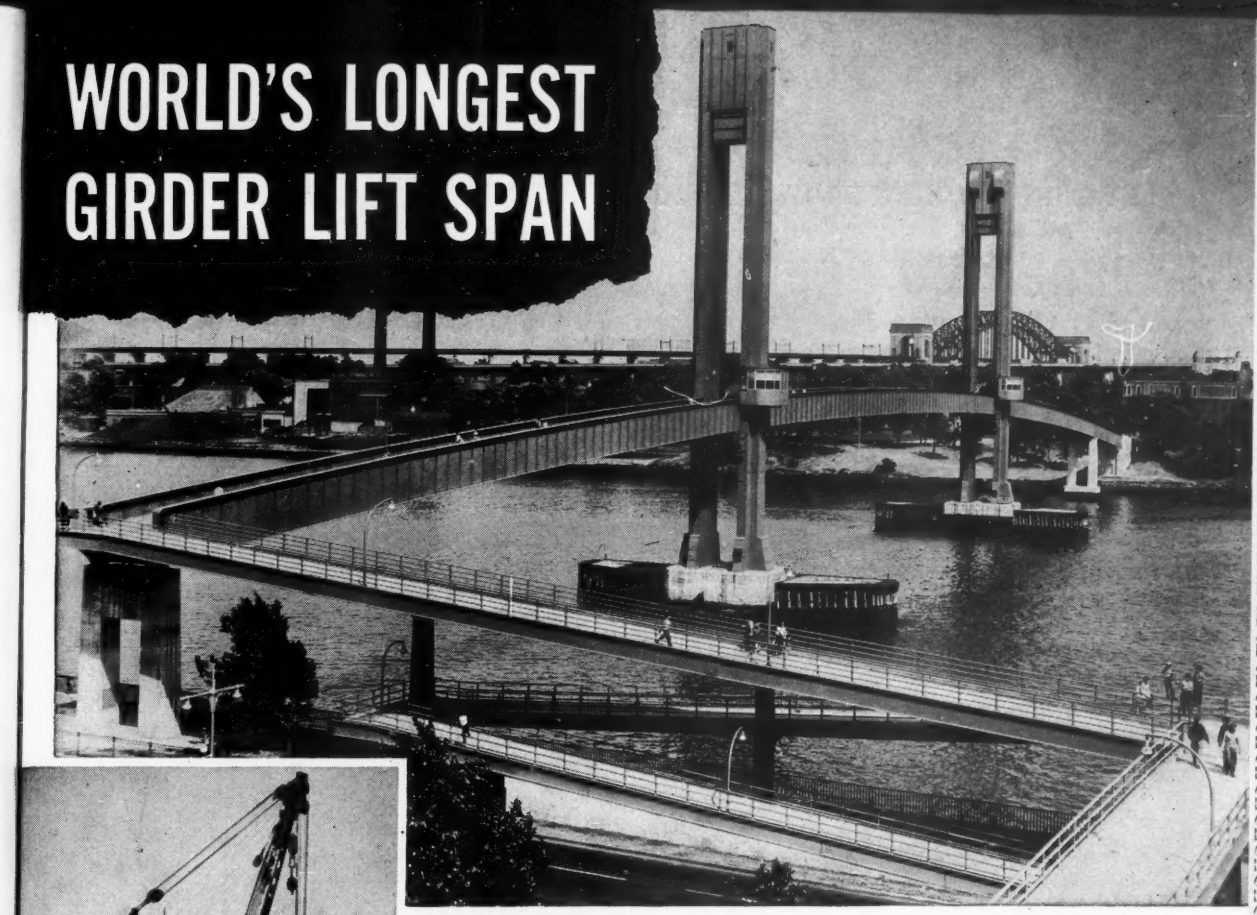
DODGE-TIMKEN PILLOW BLOCKS

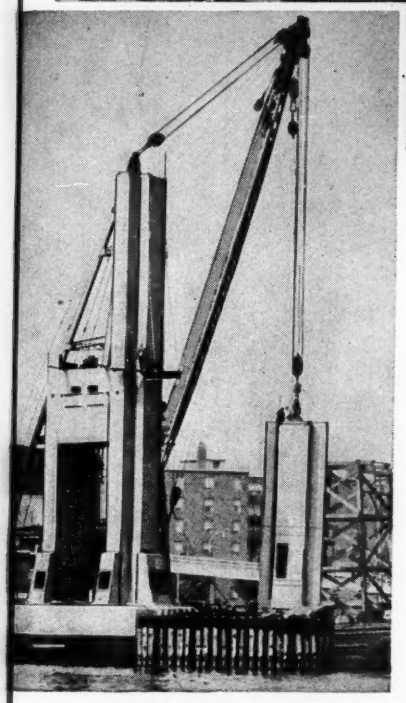
SOLID STEEL CONVEYOR PULLEYS

NAME PLATES

FOR YOUR NAME PLATE REQUIREMENTS, WRITE OUR SUBSIDIARY, CHICAGO THRIFT-ETCHING CORPORATION, 1555 SHEFFIELD AVENUE, CHICAGO 22, ILLINOIS

WORLD'S LONGEST GIRDER LIFT SPAN





Erecting a section of one of the two lift span towers for the new Harlem River Pedestrian Lift Bridge.

Plans and specifications by Triborough Bridge & Tunnel Authority. O. H. Amman, Consulting Engineer. Fabrication and erection of steelwork by American Bridge.

...another one for the record by AMERICAN BRIDGE

The Triborough Bridge & Tunnel Authority's new pedestrian lift bridge over the Harlem River has the longest girder lift span in the world. The 4-span, 956-ft. long bridge provides access from East 103rd Street to Wards Island, New York.

Consisting of two silicon-steel plate girders fabricated into a single lift span 312 ft., 2¼ in. long, 10 ft. deep, and weighing 315 tons, the main span of this interesting bridge is also the longest simply supported girder span in the U.S.A.

Swung 55 ft. above the river and supported by two 174 ft. high towers, this unusual span has a lift of 80 ft. to provide clearance of at least 135 ft. above water.

1,900 tons of steel were used in the entire bridge, including the Manhattan ramp approach and was fabricated and erected by American Bridge. This project is another example of American Bridge versatility and the kind of job you can expect when you make use of our half century of bridge building experience.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL COMPANY
GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE · ATLANTA · BALTIMORE · BIRMINGHAM · BOSTON · CHICAGO CINCINNATI · CLEVELAND · DALLAS · DENVER · DETROIT · DULUTH · ELMIRA · GARY · MEMPHIS MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH · PORTLAND, ORE. · ROANOKE · ST. LOUIS SAN FRANCISCO · TRENTON UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

USS

UNITED STATES STEEL

Let this booklet show you the way to

INCREASED PRODUCTION EFFICIENCY THROUGH INDUCTION HEATING

Westinghouse has prepared a Case History Booklet showing a few of the Induction Heating applications presently being used by some of America's largest manufacturers. It's one amazing record after another of what Induction Heating can do . . . backed up by product, production and cost comparison figures. Some cases may remind you of situations in your plant. Others may suggest application possibilities not yet tried. But all the stories will give you a good idea of the ever-increasing scope of Induction Heating.

Already, thousands of different parts are being hardened, annealed or joined by Induction Heating. But there are thousands more that could be . . . and should be heat treated by this method. *Because in virtually every case where Induction Heating has been put to work, the user has gotten increased production efficiency . . . at lower operating cost!* But see for yourself what this outstanding tool can do. Just clip the coupon for your free copy of this informative booklet — or drop us a line with your request to Westinghouse Electric Corporation, Dept. S-38, 2519 Wilkens Avenue, Baltimore 3, Maryland.

CLIP THIS COUPON

Westinghouse Electric Corporation
Electronics & X-ray Division, Dept. S-38
2519 Wilkens Avenue
Baltimore 3, Maryland

Please send me a copy of the detailed Westinghouse Induction Heating Case History Booklet.

Name_____ Title_____

Company_____

Street_____

City_____ Zone_____ State_____

YOU CAN BE SURE... IF IT'S

Westinghouse

INDUCTION HEATING

BUILDING A GREATER AMERICA

Safety's a big job, too, at Sun Ship. Safety glasses help protect workers who make the chips fly on other big jobs.

. . . BIG JOBS

It would take a super-Pollyanna to describe a machine shop as a sculptor's studio . . . And we haven't yet met a Sun Ship machinist who poses as a Michelangelo . . . at least in his shop work.

But the sculptor fashioning marble into the statue or architectural ornament that will be a thing of beauty . . . and the machinist shaping steel into the 100-foot fractionating tower or small safety valve that will be a thing of service . . . share alike in the knowledge that little chips are part of a big job.

A lot of chips tumble onto the floors of Sun Ship's many shops and shipways every day. It's been that way for more than 35 years. And it's that way because Sun Ship is doing a pretty big job with men and metals as its part in helping build a greater America.

Sun

SHIPBUILDING & DRY DOCK COMPANY

SINCE 1916

ON THE DELAWARE • CHESTER, PA.

25 BROADWAY • NEW YORK CITY

100% Alloy·recovery

WITH AJAX-NORTHRUP INDUCTION HEAT

Ajax-Northrup furnaces are famous for their ability to give back what you put into them. They melt *any* metal with minimum losses, at high speeds, and with extremely accurate control of analysis and pouring temperatures.

For example, a foundry using these furnaces to melt stainless steel for corrosion and heat resistant castings reports the following figures on recovery of elements going into the make-up of 18-8 type alloys:

Ni: 100% Cr: 99% Mn: 90%
Si: 94% Mo: 95% Cb: 92%

Another Ajax user saves $60,000 a year just by reducing chromium losses alone. Still another controls pouring temperatures within 20 deg. F., turns out castings so perfect that repair welding has been eliminated.

Ajax-Northrup can save metals and money for you, too. Write us today for details.

SEND FOR NEW INDUCTION HEATING AND MELTING BULLETIN

134

FOR HEATING AND MELTING

AJAX NORTHRUP

AJAX ELECTROTHERMIC CORPORATION

AJAX PARK
TRENTON 5, NEW JERSEY

Associate Companies

AJAX ELECTRO METALLURGICAL CORP.
AJAX ELECTRIC FURNACE CORPORATION
AJAX ELECTRIC COMPANY, INC.
AJAX ENGINEERING CORPORATION

Cut Welding Time 40%!

GET { fewer rejects!
no burn-throughs!
100% penetration!
X-ray quality!

Use a P&H AC Welder

— *the only welder with Instantaneous Control*

Ideal for use with inert gas. Lets you handle "hard-to-weld" metals with ease — aluminum, magnesium, brass, copper, stainless, high carbon, high alloy, and low carbon steels

A touch of your toe instantly gives you the exact heat you need — there's no time lag! That's how this P&H AC Welder gives you the instantaneous control you don't get with other welders.

When you use it on high frequency with inert gas, you can fabricate to close tolerances. And there's no burn-back to oxidize the metal before you get started.

The P&H Inert Gas Welder saves production time these five ways — no other welder makes the work so easy:

1. Foot switch automatically starts power, high frequency, gas, water.
2. Arc starts instantly without touching work.
3. Foot control instantly provides exact heat needed *while* welding.
4. Foot switch cuts power and high frequency immediately or gradually at completion of weld.
5. Automatic time delay shuts off gas and water.

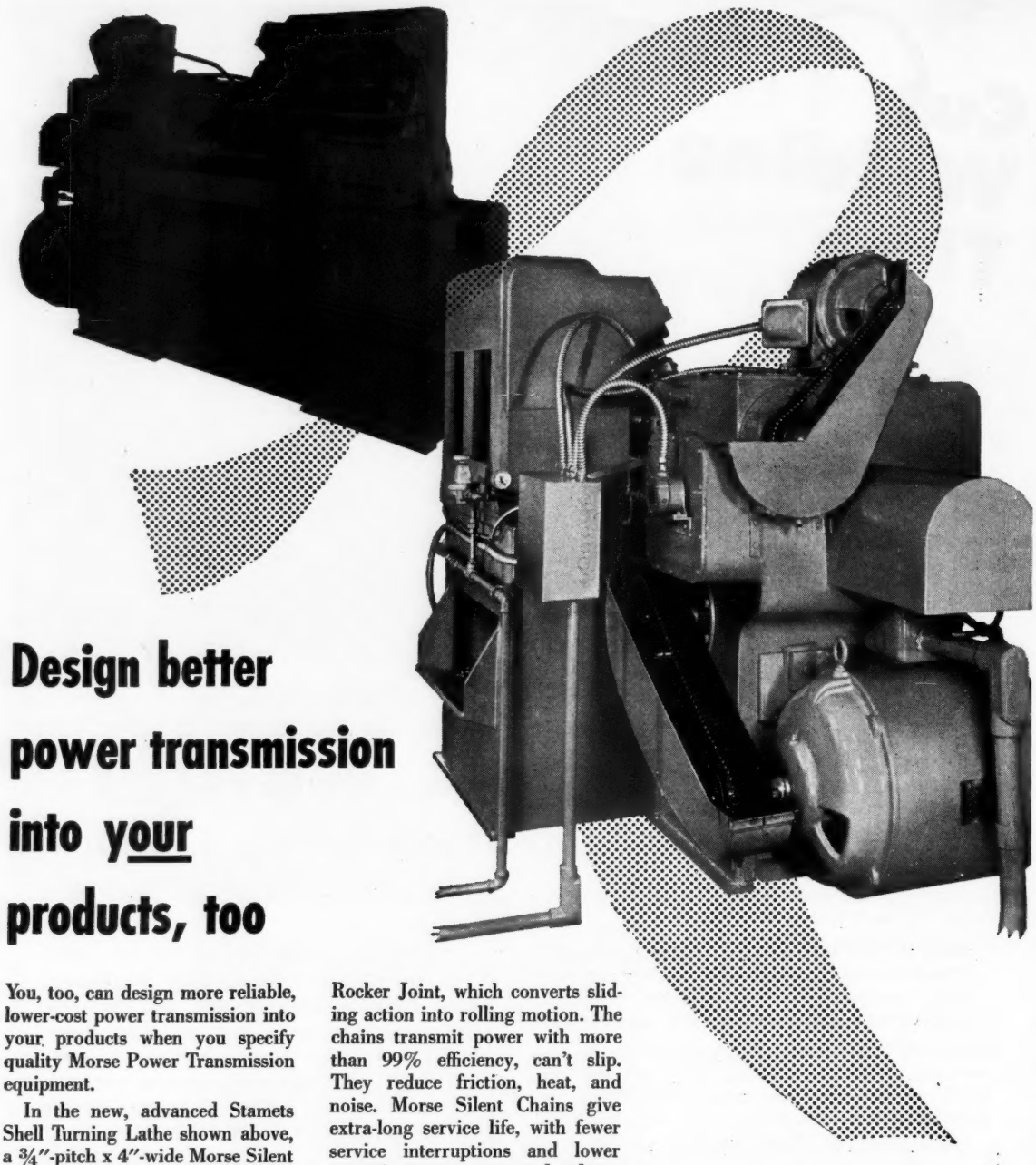
There are other outstanding P&H AC Welder features: P&H Dial-lectric Control that eliminates moving parts — for lower maintenance cost, easier operation. Built-in high-frequency unit that eliminates additional external equipment. Stepless amperage regulation. Unusual arc stability. Selector switch that gives operator choice of standard or high frequency.

Cut *your* welding time for non-ferrous and "hard-to-weld" metals. Get faster, easier, sounder welds — fewer rejects. Use a P&H AC Welder.

Ask your P&H representative for further information — or write us.

P&H WELDING DIVISION
HARNISCHFEGER CORPORATION
4411 WEST NATIONAL AVE. • MILWAUKEE 46, WISCONSIN

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES



Design better power transmission into your products, too

You, too, can design more reliable, lower-cost power transmission into your products when you specify quality Morse Power Transmission equipment.

In the new, advanced Stamets Shell Turning Lathe shown above, a ¾″-pitch x 4″-wide Morse Silent Chain Drive functions as primary drive from 75-HP motor. The small carriage drive is a ½″-pitch x 1″-wide Morse Silent Chain Drive. Both drives are the result of Morse engineers working closely with Stamets engineers during lathe's design phase.

Morse Silent Chain Drives are built around the exclusive Morse Rocker Joint, which converts sliding action into rolling motion. The chains transmit power with more than 99% efficiency, can't slip. They reduce friction, heat, and noise. Morse Silent Chains give extra-long service life, with fewer service interruptions and lower operating costs — *proved* advantages delivered by all Morse Power Transmission Products.

Whether your need is for better power transmission through silent or roller chain drives, flexible couplings, drive shafts, or clutches, turn to Morse as Stamets has. Write us about any application you have in mind.

MORSE
MECHANICAL *POWER TRANSMISSION* PRODUCTS
PRODUCTS OF BW BORG-WARNER

M=PT, Morse *means* Power Transmission

MORSE CHAIN COMPANY
Dept. 333 • 7601 Central Ave. • Detroit 10, Michigan

Now! TOCCO* Induction Melting Furnaces for Precision Casting

One of the TOCCO Induction Melting Furnaces used at Arwood Precision Casting Co. Note TOCCO control station in background.

● Engineers at Arwood Precision Casting Co. use TOCCO Induction Melting Furnaces for melting and remelting quality steel. Other companies have found TOCCO equally adaptable for melting non-ferrous metals. No wonder! *Look at the advantages:*

★ Stepless power control
★ Extremely Rapid Melting
★ High Efficiency on Intermittent Operation
★ Good Mixing because of Natural Agitation
★ Extremely Low Alloy Loss
★ No Carbon Pick-up
★ No Contamination when Composition of Charges is Changed
★ High Reproducibility of Results
★ Minimum Space Requirements
★ No Special Installation Charge
★ Simple, Safe Operation
★ Clean, Comfortable Working Conditions

If any of these advantages suggest economies in your operations write for full details—no obligation, of course.

THE OHIO CRANKSHAFT COMPANY

TOCCO

*Trade Mark Reg. U. S. Pat. Off.

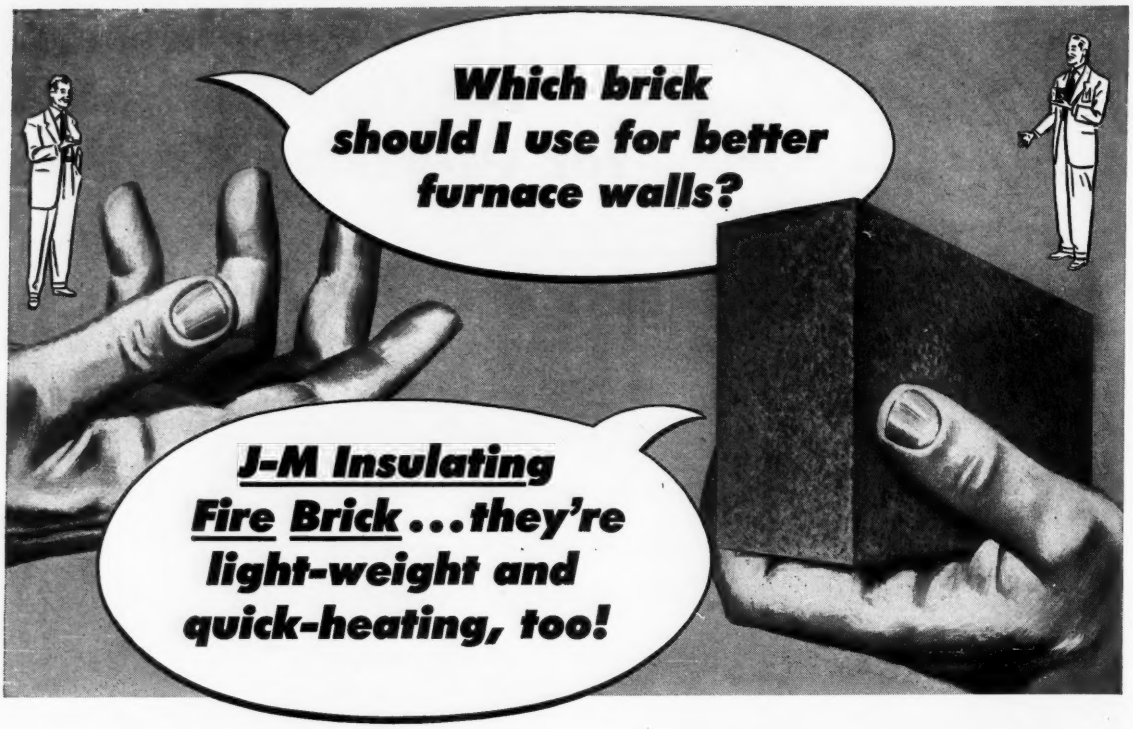
Mail Coupon Today

NEW **FREE** BULLETIN

THE OHIO CRANKSHAFT CO.
Dept. S-6, Cleveland 1, Ohio

Please send copy of "The Case for TOCCO Induction Melting."

Name_____
Position_____
Company_____
Address_____
City_____ Zone____ State____



6 types . . . for savings in services up to 3000F

Because of their quick-heating and low-heat transfer characteristics, Johns-Manville Insulating Fire Brick are efficient fuel-savers for use at operating temperatures up to a full 3000F on the insulation.

Each type of J-M Insulating Fire Brick has the correct balance of thermal and physical properties that assures maximum economies within a specific temperature range. All types are *quick-heating* . . . operating temperatures are reached in a short time, thereby saving fuel.

Identical materials can also be obtained in large size units known as Johns-Manville Insulating Fireblok. Fireblok have the same properties as the brick, but are made in extra large sizes for added construction economies. The large units can be installed faster . . . require fewer joints and less bonding mortar. During rebuilding or repair, furnace down-time is appreciably shortened with Fireblok construction.

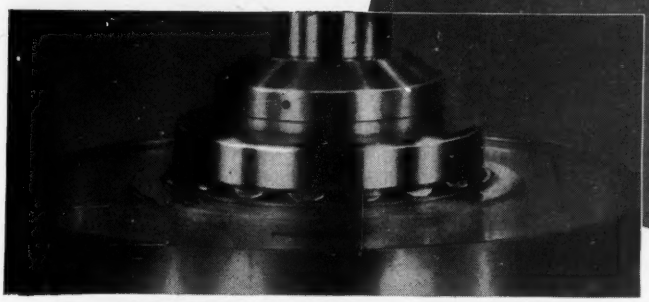
A Johns-Manville insulation expert will gladly explain the advantages and economies of using J-M Insulating Fire Brick and Fireblok for refractory linings or as back-up insulation behind other refractory protection. Write to Johns-Manville, Box 60, New York 16, N. Y. In Canada, write 199 Bay St., Toronto 1, Ontario.

Properties	Types of Insulating Fire Brick and Fireblok					
	JM-3000	JM-28	JM-26	JM-23	JM-20	JM-1620
Temperature limit	†3000F	†2800F	†2600F	†2300F	†2000F	‡2000F †1600F
Density, lb per cu ft	63–67	58	48	42	35	29
Transverse strength, psi	200	120	125	120	80	60
Cold crushing strength, psi	40	150	190	170	115	70
Linear shrinkage, percent	*0.8 at 3000F	4.0 at 2800F	1.0 at 2600F	0.3 at 2300F	0.0 at 2000F	0.0 at 2000F
Reversible thermal expansion, percent	0.5–0.6 at 2000F	0.5–0.6 at 2000F	0.5–0.6 at 2000F	0.5–0.6 at 2000F	0.5–0.6 at 2000F	0.5–0.6 at 2000F
Conductivity (Btu in. per sq ft per F per hr at following mean temperatures)						
500F	3.10	2.00	1.92	1.51	0.97	0.77
1000F	3.20	2.50	2.22	1.91	1.22	1.02
1500F	3.35	3.00	2.52	2.31	1.47	1.27
2000F	3.60	3.50	2.82	2.70	1.72	....

*24-hr Simulative Service Panel Test; all others 24-hr soaking period. †Back-up or exposed. ‡Back-up only.

JOHNS-MANVILLE JM PRODUCTS **Johns-Manville** *first in* **INSULATIONS**

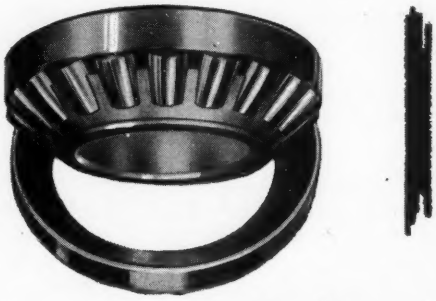
Here's the Bearing for Heavy THRUST LOADS At High Speeds



SKF Spherical Roller Thrust Bearing showing typical vertical mounting prior to operation. Note the static oil level and compare it to the oil action illustrated below.

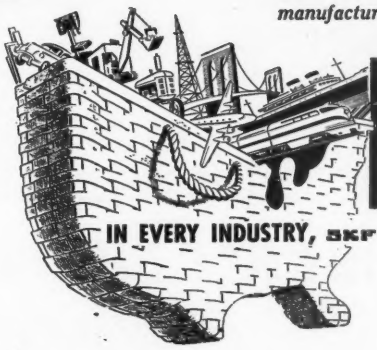
As the bearing rotates note how the lubricant is pumped outwardly along the rollers against the inner ring guide flange. This design assures perfect lubrication, low torque, long, trouble-free life.

SKF Spherical Roller Thrust Bearing is your answer where the problem is to support heavy thrust loads at high speeds on vertical or horizontal shafts.



- It has High Thrust Capacity — designed to carry heavy thrust loads, or combined loads which are predominantly thrust.
- It Is Fully Self-Aligning — has a single row of rollers which roll on a spherical outer race with full self-alignment.
- It Has A Ring-Centered Cage — constructed so lubricant is pumped directly against inner ring's high guide flange.
- It Has Low Friction Torque — an efficient oil film is developed between the roller and surfaces and the guide flange, when running.

Catalog #285 gives you all the dimensional data on SKF Spherical Roller Thrust Bearings. Send for your copy to **SKF INDUSTRIES, INC.,** PHILADELPHIA 32, PA.,— *manufacturers of* **SKF** *and* HESS-BRIGHT *bearings.* 7322

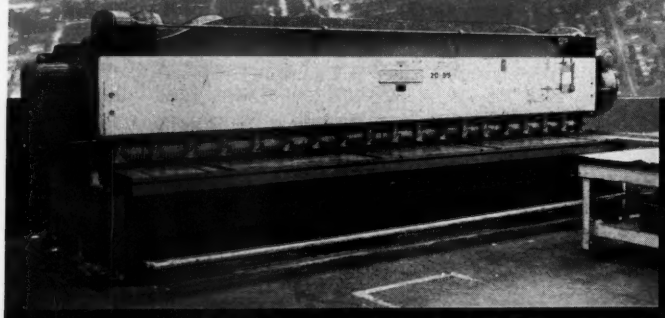


SKF®
BALL AND ROLLER BEARINGS

IN EVERY INDUSTRY, SKF Puts The Right Bearing In The Right Place

CINCINNATI Shears at CONVAIR

Photos: Courtesy Consolidated Vultee Aircraft Corp., Fort Worth, Texas



This $\frac{3}{16}$" x 18' Cincinnati All-Steel Shear, one of the Cincinnati units at Convair, has the length to cut full length standard sized sheets.

Cincinnati All-Steel Shears at Consolidated Vultee Corporation are shearing sheets straight and true in the important production of the world's largest bombers.

Illustration shows a $\frac{3}{16}$" by 18' Cincinnati Shear, one of the Cincinnati units at Convair. Aircraft production requires unusual length as well as unusual accuracy in shearing. Cincinnati furnishes shears to the aircraft industry in lengths up to and including 24' of length in $\frac{1}{4}$" thickness.

Cincinnati All-Steel Shears will give you accurate performance. Write for Shear Catalog S-6.

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

June 9, 1952

Why the Union Shop?

Why is Mr. Murray so insistent about the union shop? His steelworkers have done pretty well without it. The answer lies in organized labor's worries about its total membership. In 1945, some 14.8 million workers were organized. Membership now is no greater than 16 million, probably around 15.5 million. The civilian labor force in 1945 numbered 53.9 million people; it's 63 million now, or 16.9 per cent greater than in 1945. Even taking the highest estimate of union membership now, today's organized workers are only 8.1 per cent more numerous than in 1945. Mr. Murray wants to set a precedent in steel, so other unions can more easily win the closed shop and thus boost their membership.

No New Labor Law Soon

The steel strike may spur congressional action on legislation to curb unions or force long cool-off periods, but it won't come in time to affect the present trouble (p. 61). Congress just doesn't act that fast. What's more, the legislators dislike to make drastic changes before a big election. They'll talk a lot now, but probably won't take much decisive action until after November.

Decontrols Unaffected—Maybe

A short steel strike won't seriously affect steel decontrol plans. A long one would throw everything out of schedule. "Short" means two weeks or less. According to original plans, July 1 would mark the beginning of an accelerated scheme of decontrol—marked relaxation of construction curbs, less restrictions on more steel products, less stringent regulations on the distribution and prices of nonferrous metals.

Civilian Buyers for Defense?

Pressure is increasing to have a centralized civil authority handle the procurement and supply functions of the Defense Department. The powerful House Small Business Committee is pushing a plan that would limit the military to the power of "requisition" with the power of "procurement" assigned to a civilian group trained in buying methods. The committee claims that unification of the Armed Forces thus far has not sufficiently exploited the benefits of unified purchasing.

Lead, Zinc Prices Drop

Lead prices are dropping. In the last two months they have slipped from a high of 19 cents a pound at which they held for about a year to the current quotation of 14.80 cents. One effect of that is a decline in industrial and automotive storage battery prices. Lead accounts for nearly 60 per cent of the weight of the average battery. Delco-Remy Division of General Motors Corp. and Electric Auto-Lite

Production-Engineering News—p. 89 *The Market Outlook—p. 155*

have already quietly cut prices 6 to 8 per cent. Zinc is also down 3.5 cents per pound (p. 167).

Trouble in Nickel

The supply outlook for most metals is still promising, but not for nickel. The nickel shortage is growing. NPA authorities put demand at twice supply. Consumption of nickel for plating will be further restricted, possibly this month. As of now, automakers have no suitable substitute for nickel plating on such functional parts as bumpers and bumper guards.

Three-Way Scrap Deal

Some 10,000 tons of scrap was purchased in Canada at a price $10 higher than the regular quotation. The tonnage was shipped to Germany to be used in the production of 4000 tons of steel pipe which will be used by an American oil firm in the U.S.

More Screw Machine Capacity

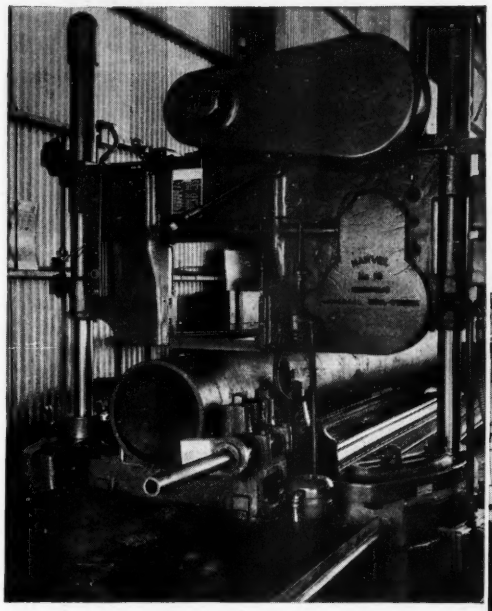
The screw machine products industry plans a $15 million expansion program. The bulk of that will be for the independent jobbing shops, not the captive screw machine departments. The jobbing industry consists of about 1800 small business firms with total capital assets of about $150 million. It expects to do $440 million worth of business this year, nearly half of which will be for defense. Lately, the jobbing shops have had trouble getting new screw machines. DPA approves the new expansion goal, and the O.K. should help in getting equipment.

Straws in the Wind

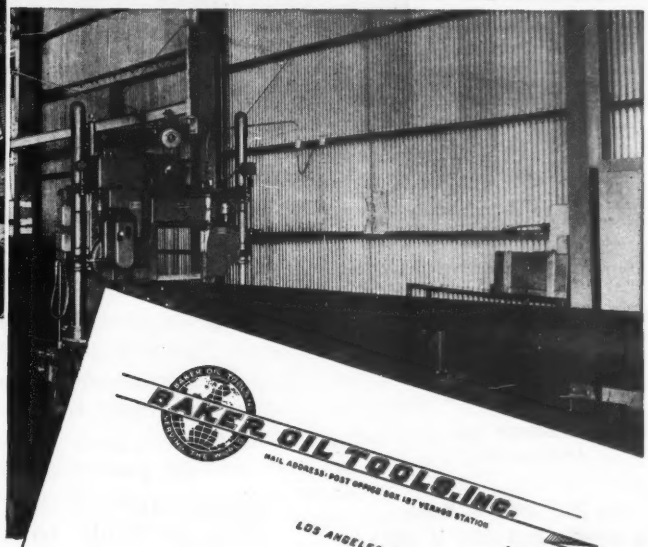
Nash-Kelvinator Corp.'s Kelvinator Division cut the suggested retail prices on its lower-priced refrigerators $28 to $35 . . . Ford Motor Co. has an additional order for T-48 medium tanks, bringing the total value of such orders to $426 million . . . The Armed Forces are ready to loose a flood of new defense contracts as the Defense Department reported on May 1 $18.5 billion still available for procurement and construction to the end of this fiscal year, June 30 . . . Current plans for increasing Canadian steel production will make Canada practically self-sufficient in steel; it uses 5.5 million tons yearly . . . Average pay for chief sales executives of 250 major corporations is $42,500 a year in salary and bonus.

What Industry Is Doing

The steel walkout may be settled by a $5.50 price hike and a 20-cent wage package (p. 61) . . . Companies not on strike produce 13.4 per cent of the ingot production (p. 62) . . . Soft coal operators hope John L. Lewis will soften requests (p. 63) . . . Private homebuilding is expected to reach 1 million units in 1952 (p. 64) . . . New alloys for hard gears are developing (p. 65) . . . Ban on shipments of unrated machine tool orders may end well before the fourth quarter (p. 66) . . . NPA forms a new group to locate machine tools (p. 66) . . . Salesmen are prepared for any rough time ahead, says David E. Davidson, vice president, sales, Link-Belt Co. (p. 72).



TUBE CUTTING on a LARGE SCALE at BAKER OIL TOOLS, Inc.



Cutting-off steel tubing, generally considered a slow and costly operation is done quickly and economically, on a large scale, at Baker Oil Tools, Inc. two plants. Really large tubes, up to 18" in diameter are handled on the Giant No. 18 Marvel Hydraulic Hack Saw, illustrated above, quickly and accurately cutting off large steel oil well casing and casing coupling stock. This company also has a No. 6A MARVEL High Speed Production Saw, (capacity 6" x 6") for automatically cutting off single or nested tubes or bars of smaller diameter. Solid stock or tubes, they're all the same to MARVEL Saws.

Whatever your metal sawing problems, there are MARVEL Saws exactly suited to your requirements. Your local MARVEL Sawing Engineer will gladly analyze your problem, make recommendations and quote costs.

Write for Catalog

BAKER OIL TOOLS, INC.

MAIL ADDRESS: POST OFFICE BOX 187 VERNON STATION
LOS ANGELES, CALIF.
CABLE ADDRESS: "BACASO"
MAIN OFFICE AND FACTORY
6900 SO. BOYLE AVENUE

Armstrong-Blum Mfg. Company
5700 Bloomingdale Avenue
Chicago 39, Illinois

Gentlemen:

We are well satisfied with the results which we are getting from our two Marvel #18 Hydraulic Hack Saws, and from the #6A Marvel High Speed Production Saw. Production time and production costs have been reduced since these machines have been in service.

At the present time we have a #9 Marvel Saw on order which will replace an obsolete machine and we are expecting to again improve our production when it is put into operation.

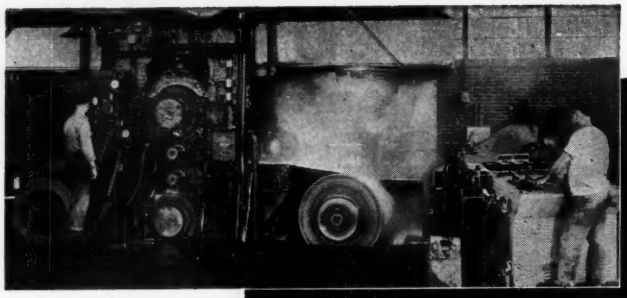
Your factory representatives have been very considerate and have taken care of our needs quite satisfactorily.

BAKER OIL TOOLS, INC.
C. A. McDonald
C. A. McDonald
Production Manager

Metal Cutting
MARVEL SAWS
Better Machines-Better Blades

ARMSTRONG-BLUM MFG. COMPANY

5700 BLOOMINGDALE AVENUE **"The Hack Saw People"** **CHICAGO 39, U. S. A.**



One of the 4 Hi Reversing Cold Rolled Strip Mills used by DSC in producing STEEL STRIP

When you buy Cold Rolled Strip what do you get *besides* width?

DEPENDABLE DAN
T.M. REG. U.S. PAT. OFF.

WILL SCRAP SUPPLY BE AS EASY IN DECEMBER AS IT LOOKS IN JUNE?

Predictable normal scrap recovery insufficient to maintain near-capacity steelmaking.

To avert crisis this winter— KEEP DORMANT SCRAP COMING—TURN YOURS IN

NATURALLY, in Reliance Steel Strip, you get the width you order. But here are some important benefits you get *besides:*

- The benefit of close gauge—thickness accuracy governed by STRIP tolerances
- The benefit of uniform temper—Rockwell ranges (soft to full hard) governed by STRIP standards
- The benefit of consistent workability—throughout a single lot or repeat lots
- The benefit of choice of finish—regular bright or "satin" to suit your special purposes

Reliance STRIP is STEEL STRIP *in name and in fact.* It is rolled on STRIP MILLS, not "made" on slitters or shears.

Immediate delivery from warehouse stocks or shipped on short notice, in accordance with your own "prescription" direct from DSC Mills at Detroit or New Haven.

FOR HELPFUL ACTION CALL OUR NEAREST PLANT OR OFFICE

DETROIT STEEL CORPORATION

PRODUCERS OF
Coke and Coal Chemicals • Pig Iron • Ingots
Slabs • Sheet Bars • Billets • Wire Rods
Manufacturers' Wire • Merchant Wire Products
Welded Fabric • Cold Rolled Strip Steel

GENERAL OFFICES
DETROIT 9, MICHIGAN

RELIANCE STEEL DIVISION

Processors and Distributors JOB-FITTED Sheet and Strip Steel

GENERAL OFFICES — BOX 4308 — PORTER STATION, DETROIT 9, MICHIGAN

PLANTS

CLEVELAND PLANT, 3344 E. 80th St., VUlcan 3-3600, Cleveland 27, O.
DETROIT PLANT, 13770 Joy Road, WEbster 3-5866, Detroit 28, Mich.
EASTERN PLANT, State & Edmund Sts. (Hamden), New Haven 7-5781, New Haven 7, Conn.
MIDWEST PLANT, 1601 South Wolcott Ave., CAnal 6-2442, Chicago 8, Ill.

OFFICES

DAYTON, OHIO, 120 W. Second St., Michigan 8581
DETROIT 28, MICH., 13770 Joy Road, WEbster 3-5866
GRAND RAPIDS 2, MICH., 326 Keeler Bldg., GLendale 6-9580
INDIANAPOLIS 4, IND., 1400 Fletcher Trust Bldg., FRanklin 3429
JACKSON 18, MICH., 901 Reynolds Bldg., JAckson 3-3250
MILWAUKEE 18, WIS., 4622 W. Center St., HIllop 2-1060
NEW YORK 19, N. Y., 250 West 57th St., COlumbus 5-4870
ROCHESTER 4, N. Y., 5 St. Paul St., BAker 1061
ST. LOUIS 8, MO., 4053 Lindell Blvd., LUcas 4550
TOLEDO 4, OHIO, 2114 Ohio Bldg., GArfield 8384
WORCESTER 8, MASS., 339 Main St., WOrcester 5-9088

RELIANCE *Job-Fitted* PRODUCTS

COLD ROLLED STEEL STRIP and FLAT WIRE

Coils . . . Cut Lengths . . . All Tempers

SHEETS

COLD ROLLED . . . HOT ROLLED . . . H. R. PICKLED . . . LONG TERNE . . . GALVANIZED

Standard and Production Sizes or Cut to Actual Working Dimensions

COPYRIGHT 1952 D S.C.

June 9, 1952

Guard Against New Assaults

As organizations and individuals we are obliged to give sober thought and study to the implications of the steel wage case in terms of what may lie ahead.

Although it is often said that there is no road back to the past, it still may be correctly stated that the six-to-three Supreme Court decision preventing government seizure of the steel industry is a return to constitutional government.

More appropriately, it can be stated that the Court has set up a road block in the long and devious road to outright socialism that had been wending its way inexorably from the early days of the Roosevelt administration. The Court's decision again is diverting traffic along the original road of true democracy. Keeping the traffic flowing in that direction now is the problem.

Dissenting Justices Vinson, Minton and Reed in effect admitted that the President had no authority either under the Constitution or by law to take over steel when they said the President's action was taken temporarily to preserve the military procurement and anti-inflation programs until Congress could act.

Congress had acted. In drafting the Taft-Hartley act, Congress rejected an amendment authorizing seizure of plants in the belief that it would interfere with orderly collective bargaining. Right along, the President has had Taft-Hartley machinery available for settlement of a dispute which could have prevented six months of interrupted steel production and loss of wages.

The Court's decision marks a turning point in the lives of those believing in democratic principles. In the words of a management man, Charles M. White president of the Republic Steel Corp., "The decision should be heartening to every freedom-loving man and woman throughout the world." And, a voice of labor, D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen: "By redefining the constitutional rights of industry in labor disputes, the decision protects industry against seizure of its property and labor in its right to strike."

Remember that only one battle has been won in resetting the course of the nation. Be on guard against further assaults on our constitutional rights and privileges.

Irwin H. Such

EDITOR

MORE DUES FOR JOE: Last week we talked to an ambitious young fellow we know by the name of Joe with a wife and three kids and a house he helped build and is buying on monthly installments. And, Joe was feeling downright low.

Joe has been doing pretty well. The rolling mill in the steel plant where Joe works is not

new but he and the 15 other fellows on his crew know how to get out the extra tonnage that means bonus dollars in their pay checks. Take Joe's pay for some typical consecutive days in May: $17.22, $19.39, $18.74, $19.38, $16.37 and $31.59 for a Saturday with time and a half.

But, Joe now is missing his fat pay checks. For, when Joe showed up at the gate Monday for second turn, the strike was on and he was told to go home. So were his 15 buddies.

Joe felt it would be good politics to join the union several years ago. He thinks the only reason President Truman held off on Taft-Hartley was to let the union brass run the show. He is convinced the Supreme Court was right in deciding against seizure of the steel industry even though it hits his pocketbook. He wonders how long it will take to make up for lost pay when he gets back to work.

And, Joe doesn't like the rumor he hears about Phil Murray raising dues from $2 to $3 a month, adding $6 million a year to the union treasury.

* * *

MORE HOMES: Strength in home construction is providing a prop under the national economy at a time when many soft spots are appearing. More than one million new residential units (p. 64) likely will be started this year, well above earlier expectations.

This factor should not be overlooked in appraising the economic outlook for coming months. New homes mean the purchase of new stoves, refrigerators, washers, metal windows and doors, hardware and a variety of other metalworking products.

Less encouraging is the trend toward higher-priced houses and away from lower-priced units. Many builders report they are priced out of the lower brackets (up to $12,500) by rising construction costs, primarily labor. The problem of taking the water out of excessively high costs is a challenge the building industry and labor cannot ignore.

* * *

HELP FOR TOOL BUILDERS: Restrictions on shipments of machine tools against unrated orders soon may be lifted. Such a move would be welcomed by the machine tool builders and by the many industries that want and need new tools now.

Industry representatives believe (p. 66) that lifting the ban on shipments against unrated orders would speed up rather than retard deliveries of machine tools to defense plants. Shipments against unrated orders would spur subcontracting and increase the flow of production.

The relaxation also would provide a stimulus for tool builders and their customers at a time such stimulus would be most welcome.

Washington controllers should be on the alert to decontrol machine tools and all materials as developments dictate.

* * *

COMPETITION: One of the foundations of our American system is the competition we have in business and industry. There is no greater evidence of this competition than in the automobile industry. And, at the moment, none greater than between Ford and Chevrolet.

Many of us can remember the high-geared Model T Fords that were great for negotiating muddy country roads and almost everybody drove one. With better roads and more competition, Ford finally ditched the Model T in 1928 for the more rakish Model A. Four years later came the first of the V-eights.

Chevrolet switched from a four to a six 20 years ago and in the last few has grabbed the lead in sales from Ford. But, now the fight is on (p. 76). Ford came out with a slick new 1952 model and is selling more than Chevrolet.

Not to be outdone, we now hear that Chevrolet has scrapped its 1953, 1954 and 1955 designs and this fall will come out with its 1956s, minus a V-8 engine to be added later.

Everybody benefits from good competition.

* * *

PROGRESS IN ABRASIVES: New methods and developments in coated abrasives are indicative of further progress ahead for this fast-growing industry.

Coated abrasive belts already are providing an answer (p. 90) to the difficult problem of grinding and polishing contoured surfaces and fillet areas of jet blades and buckets. Working together, coated abrasives manufacturers and machine tool builders have developed new machines that make precision finishing of these blades on a production basis an accomplished fact.

Another development reported for the first time in this issue of STEEL, (p. 96), is the application of nuclear gaging for controlling the thickness of the abrasive on the backing material at rates of speed up to 350 fpm. Variation in thickness and density of adhesive, abrasive and final adhesive coat can now be held within an accuracy of 1 per cent.

Don't overlook the cost-cutting possibilities of coated abrasives in these increasingly cost-conscious times.

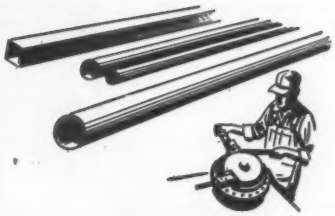
RYERSON

The Industrial P. A.'s Department Store

Here are a few of the many types of steel and related products on hand right now, ready for immediate shipment from your nearby Ryerson plant. Many may be used in place of products that are still hard to get. Check the items you need, and save time by ordering them next time you call Ryerson.

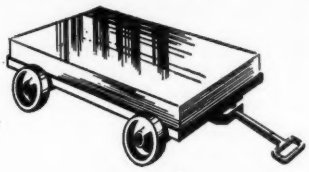
ALLOYS

Tested alloys of known hardenability, both standard and aircraft quality. Complete heat treatment guide with each shipment.



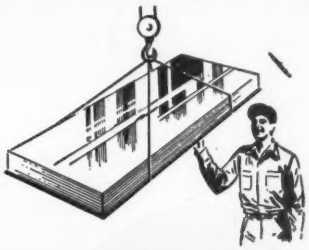
WELDED MECHANICAL TUBING

Hot and cold rolled, rounds and squares in a wide range of sizes. Consider cost. Substitute for seamless tubing.



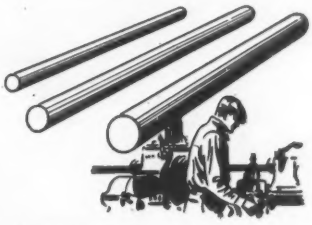
CARBON SHEETS

Both hot and cold rolled coming into better supply, especially cold rolled in the heavier gauges.



STRAIGHT CHROME STAINLESS

No allotment required for these stainless bars, plates and sheets—and they can often replace restricted nickel-bearing types.

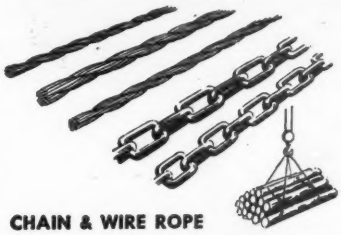


TOOL STEEL

Water, oil or air hardening steel. High in quality; economical in price. Hardening data with every shipment.

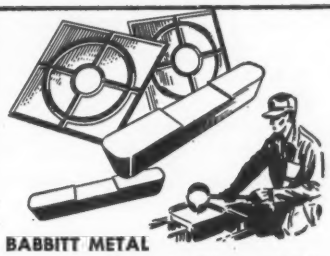
SAFETY PLATE

Strong, non-skid Inland 4-Way Safety Plate protects feet against slipping, floors against wear. Easily fabricated.



CHAIN & WIRE ROPE

Rugged, dependable TM chain, iron, steel and alloy qualities, furnished to order. High quality wire rope shipped from large stocks.

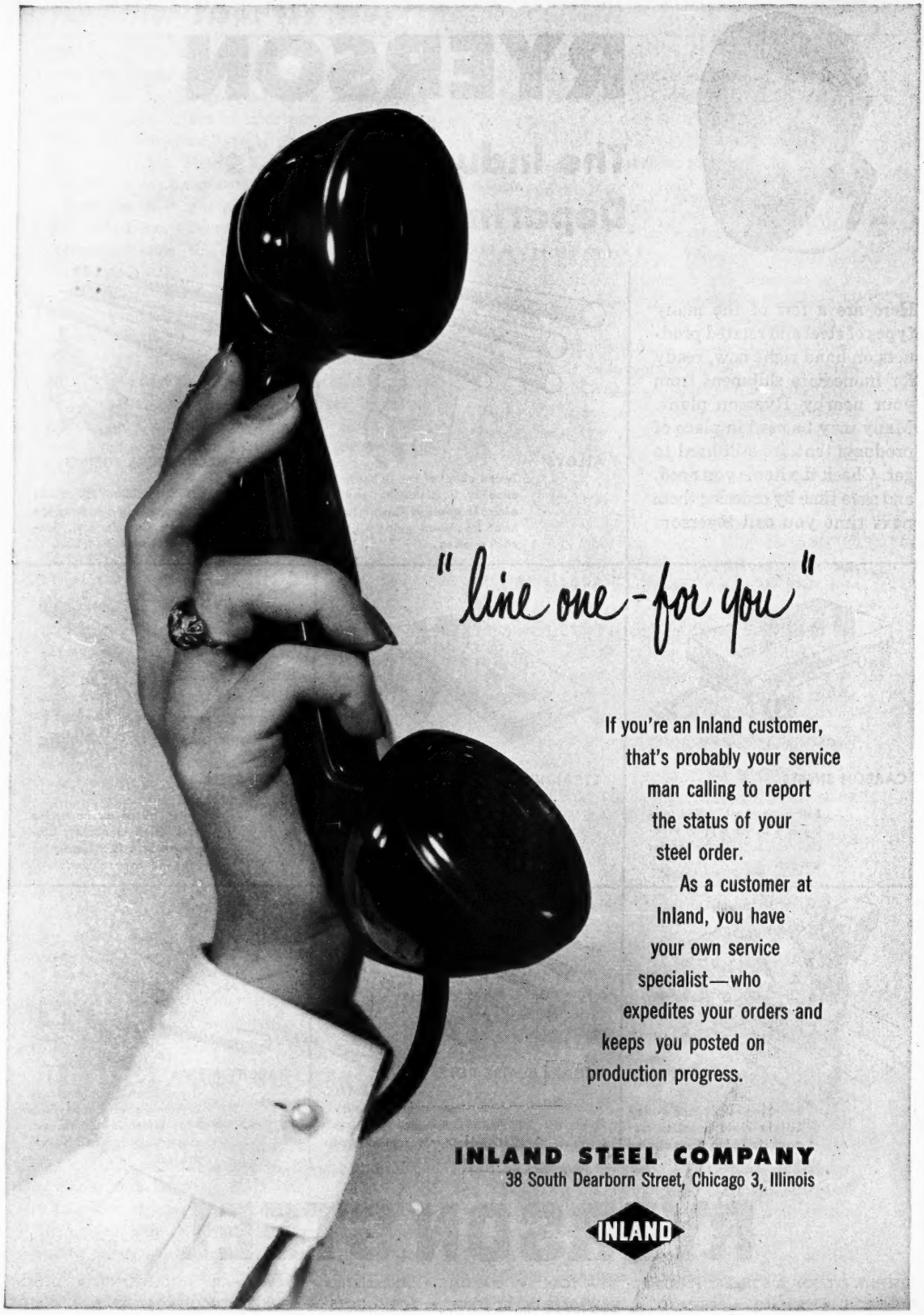


BABBITT METAL

Glyco Babbitt, an exclusive Ryerson product, has physicals equal to high tin Babbitts; costs substantially less and is unrestricted.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE


"line one - for you"
If you're an Inland customer, that's probably your service man calling to report the status of your steel order.
As a customer at Inland, you have your own service specialist—who expedites your orders and keeps you posted on production progress.
INLAND STEEL COMPANY
38 South Dearborn Street, Chicago 3, Illinois
INLAND

United Press

S-T-R-I-K-E T-H-R-E-E

For the third time in three consecutive months the nation's steel industry was struck. The steelmaking rate (charted above) dropped as low as 61.5 per cent in April, as low as 53 per cent in May and will go down to an estimated low of 25 per cent this month. Said Inland Steel's Clarence B. Randall: "It is clear who . . . threatens the armed forces. Phil Murray has struck the country again. There will be heavy hearts . . . in the families of half a million steelworkers."

Peace: All Give a Little?

For a settlement in steel, government, industry and labor will all have to modify their stands. The final result could be: $5.50 price hike, 20-cent pay package

A SETTLEMENT of the steel strike will probably be on the basis of a $5.50 to $6 per ton price hike for the companies and a 20-cent wage package for the workers.

Late last week management and labor were not too far apart on money; the problem was the union shop and contract or "who's going to run the business?" issues.

It All Depends—Steel executives are still adamant on those. If United Steelworker President Philip Murray backs down on them, a contract can probably be negotiated speedily. The union, which has a little the worst of it in the seven-month-old steel case, may be ready to give in a little at last. To save face, labor may agree to "study" union shop and contract issues until it is time to bargain again.

The companies, in turn, might be willing to sweeten the pay offer. Early in May, industry offered 12½ cents an hour as a straight pay increase, plus 5 cents in fringe benefits. Because of federal payroll levies for social security, the 17½-cent deal for the workers would cost the companies about 20 cents an hour. Late last week the industry was still prepared to offer the 17½ cents, maybe a little more.

A Help—Partly to compensate for that would be government approval of a steel price hike. Despite the strong statements by government planners that the steel industry has only the right to $3 a ton as an increase, they have actually offered $4.50 a ton unofficially just before negotiations collapsed early in May (for a chronology on the steel case, see p. 63). Behind-the-scenes talk now has it that a $5.50 raise will be permitted.

Steel executives went in a conciliatory mood to the new negotiating meeting called for last Thursday by Acting Defense Mobilizer John R. Steelman. They wanted to get back into production because a pronounced upturn in orders in the two weeks before the strike began June 2 indicated to some that a lift for business—unrelated to the strike threat—is in the offing. They also felt magnanimity—and humility—as a result of the epoch-making Supreme Court victory. They believe the decision will serve as a milestone for future historians to mark the zenith of labor's power in this era.

Longe-Range Meaning—The six-to-three court decision relates specifically to the constitutionality of the steel seizure, not to labor's influence on the President. But one of the effects of the decision will be to force any President from now on to step warily in the way he supports any special group. That may be enough to tip the balance against labor because since 1933 unions have won most of their major victories through a President's direct or indirect intervention.

In the concurrences to Associate

Postwar Steel Settlements
(wage increases in cents per hour)

Year	Settlement
1946	18.5 cents
1947	16.0 cents
1948	13.0 cents
1949	12-14 cents (in pensions and insurance)
1950	16.0 cents
1952	?

Justice Hugo L. Black's majority opinion, Justice Robert H. Jackson said, ". . . the Constitution did not contemplate that the title, Commander-in-Chief of the Army and Navy, will constitute him (the President) also Commander-in-Chief of the country, its industries and its inhabitants." Justice Felix Frankfurter commented: "The powers of the President are not as particularized as are those of Congress. But unenumerated powers do not mean undefined powers. . . The President exceeded his powers." Also concurring in the majority were Justices Tom C. Clark, Harold H. Burton and William O. Douglas. Dissenting were Chief Justice Fred M. Vinson, and Justices Stanley F. Reed and Sherman Minton.

Secondary Importance—The majority agreed with Judge David A. Pine, in upholding his District Court decision, that a steel strike, while serious, was not nearly as grave as constitutional issues.

Last Monday the steelworkers began their walkout in an orderly manner. Little damage to equipment is reported. Actually, the majority of the union members weren't anxious to strike, a factor that may speed a settlement. Last week's national operating rate fell to 37.5 per cent of capacity. NPA ordered a ban June 2 on shipments of steel from warehouses to manufacturers of consumer durables, in a move paralleling those made in the other two walkouts. An interagency committee will allocate steel produced in mills operating still on the basis of military need.

They Expected It—The strike came as no surprise to steel users. Most of them can get by comfortably for two weeks—three or four weeks if they shuffle a little. After that things would be bad, for we're losing steel at the rate of 260,000 tons a day, or 1,820,000 tons a week. The mills still operating are producing at a rate of about 280,000 tons a week, but their output will be strictly rationed. If the strike drags on, many steel users can juggle their vacation plans and reschedule holiday shutdowns for June to coincide with the strike.

Late last week, 600,000 steelworkers were idled by the strike, plus 100,000 others, mostly in coal, rail, ore and dock operations.

Who's Making Steel During the Strike

WHAT BASIC steel producers are operating during the steel strike?

Some 49 companies with ingot steel capacity were not struck last week by the United Steelworkers of America — CIO — because they settled, possess contracts which haven't expired, signed extension agreements with the union or are not under contract with USA.

Those firms have an annual in-

Plants that have steelmaking capacity not under contract with the USA. Some companies (Armco, Allegheny Ludlum) are partly organized by the union. Only facilities not organized by the USA are here included

COMPANY	ANNUAL CAPACITY (Net Tons)
Weirton Steel Co. Weirton, W. Va.	2,500,000
Armco Steel Corp.:	
Butler Div. Butler, Pa.	474,000
Middletown Div. Middletown, O.	1,505,000
Ford Motor Co. Dearborn, Mich.	1,521,280
International Harvester Co. Wisconsin Steel Works South Chicago, Ill.	900,000
Allegheny Ludlum Steel Corp. Forging & Casting Div. Ferndale, Mich.	3,000
Keystone Steel & Wire Co. Peoria, Ill.	400,000
Midvale Co. Philadelphia	274,650
American Locomotive Co. Chicago Heights, Ill.	78,000
Mesta Machine Co. Pittsburgh	105,000
Isaacson Iron Works Seattle	102,000
Washburn Wire Co. Phillipsdale, R. I.	93,000
Carpenter Steel Co. Reading, Pa.	85,800
National Supply Co. Torrance, Calif.	63,000
Seidelhuber Steel Rolling Mill Corp. Seattle	49,300
Knoxville Iron Co. Knoxville, Tenn.	38,000
Kilby Steel Co. Anniston, Ala.	34,020
Borg-Warner Corp. Ingersoll Steel Div. New Castle, Ind.	30,000
Henry Disston & Sons Inc. Philadelphia	25,000
National Forge & Ordnance Co. Irvine, Pa.	25,000
Texas Steel Co. Forth Worth, Tex.	22,320
Hoster Steel Corp. Oklahoma City, Okla.	16,920
Vanadium-Alloys Steel Co. Latrobe, Pa.	11,910
Newport News Shipbuilding & Dry Dock Co. Newport News, Va.	12,000
Columbia Tool Steel Co. Chicago Heights, Ill.	6,600
Damascus Tube Co. Greenville, Pa.	1,800
Total	8,377,600

Basic steel companies that have settled on the basis of WSB recommendations, or have contracts that haven't expired, or have signed extension agreements with the union

COMPANY	ANNUAL CAPACITY (Net Tons)
Kaiser Steel Corp. Oakland, Calif.	1,380,000
Barium Steel Corp.:	
Central Iron & Steel Co. Harrisburg, Pa.	406,000
Industrial Forge & Steel Inc. Canton, O.	48,600
Phoenix Iron & Steel Co. Phoenixville, Pa.	432,000
Alan Wood Steel Co. Conshohocken, Pa.	625,000
Timken Roller Bearing Co. Timken Steel & Tube Div. Canton, O.	547,200
Laclede Steel Co. St. Louis	410,000
Reeves Steel & Mfg. Co. Empire Steel Corp. Mansfield, O.	409,300
*Continental Steel Corp. Kokomo, Ind.	365,000
Erie Forge & Steel Corp. Erie, Pa.	234,000
Pacific States Steel Corp. Oakland, Calif.	232,000
American Locomotive Co. Latrobe, Pa.	103,000
Baldwin-Lima-Hamilton Corp. Standard Steel Works Burnham, Pa.	169,960
†Harrisburg Steel Corp. Harrisburg, Pa.	100,750
‡Ohio River Steel Corp. Toronto, O.	136,080
Oregon Steel Mills Portland, Oreg.	110,000
Edgewater Steel Co. Pittsburgh	89,890
Judson Steel Corp. Emeryville, Calif.	76,500
Connors Steel Co. Birmingham	60,000
Heppenstall Co. Pittsburgh	55,550
Southwest Steel Rolling Mills Los Angeles	36,000
Jessop Steel Co. Washington, Pa.	33,490
Union Electric Steel Corp. Pittsburgh	26,760
Latrobe Steel Co. Latrobe, Pa.	25,200
Simonds Saw & Steel Co. Fitchburg, Mass.	21,600
Braeburn Alloy Steel Corp. Braeburn, Pa.	20,730
Total	6,154,610

*Has unique contract with steelworkers which provides that Continental employees need not strike until 30 days after workers of major companies have struck.

†Last week operated on a day-to-day basis as local labor-management negotiations continued.

‡Did not operate last week because of its sale to Louis Berkman Co.

got capacity of 14,532,210 net tons, or 13.4 per cent of the industry. They can produce about 280,000 tons of steel ingots a week. They employ about 95,000.

Steel Case Highlights

THE IN-AGAIN, out-again trail of the steel wage-price dispute is enough to baffle even the most meticulous historian. Here are the highlights of the case to refresh your memory:

Nov. 15-16: United Steelworkers of America-CIO formulates 22 demands at Atlantic City convention.

Nov. 27: Negotiations with the six largest steel companies begin.

Dec. 17: Union authorizes a strike call for Jan. 1.

Jan. 3: After a previous postponement, the union postpones strike until Feb. 24. Later the strike was postponed until Mar. 23, then to Apr. 8.

Jan. 10: WSB six-man panel begins hearings on the case in Washington.

Mar. 20: WSB announces its recommendations — 30 cents an hour in wages and benefits, the union shop and fringe issues. Steel companies estimate that ultimate cost of these proposals would be about $12 a ton.

Apr. 3: Industry offers the union 16 cents an hour. The offer was refused.

Apr. 8: President Truman orders seizure of the steel mills, just as most plants are nearly shut down. Steelworkers go back to work.

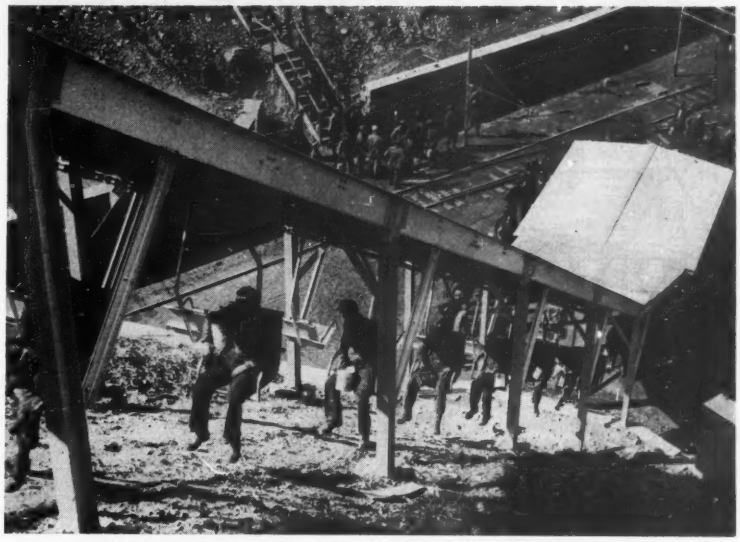
Apr. 9: Inland Steel's Clarence B. Randall refutes President Truman's version of steel case facts.

Apr. 29: Federal Court Judge D. A. Pine rules that the President's seizure of the steel industry was unconstitutional. Union calls a strike, effective at once.

Apr. 30: Court of Appeals issues a stay of Judge Pine's order to permit review of the issue by the U. S. Supreme Court.

May 2: Union calls off strike against the government.

June 2: The Supreme Court upholds Judge Pine's ruling and the steel mills return to private ownership. Union called out on strike immediately by Philip Murray.



Perhaps allegorically, coal miners are shown riding high here on a ski-hoist installed at U. S. Steel's new Gary No. 14 Mine near Gary, W. Va. The chain-belt seating unit used by skiers elsewhere carries the miners back and forth from the lower portal to the bath house above, a unique application of the device

Coal Stocks Heavy; Lewis Keeps Mum

Soft coal operators, harassed with low margins and keen competition are hoping Mr. Lewis will go easy this year. Users, who have high stockpiles, aren't worrying

SHAKESPEARE-QUOTING John L. Lewis may himself "make a virtue of necessity" by softening his demands to coal operators because of the softness in the coal market. At any time after March 31 he could have terminated the bituminous wage egreement by giving the requisite 60 days notice.

But thus far Mr. Lewis is hiding his strategy behind the famous bushy eyebrows and those eyebrows are probably raised. Here's why:

Coal To Burn—Coal stocks this year are relatively high—about 75 million tons nationally, representing a two months' supply for most metalworking users and three to four months' supply for the utilities. Coal operators never welcome a strike, but if it came, it could last several weeks without serious effect, particularly with the seasonally lower summer coal consumption.

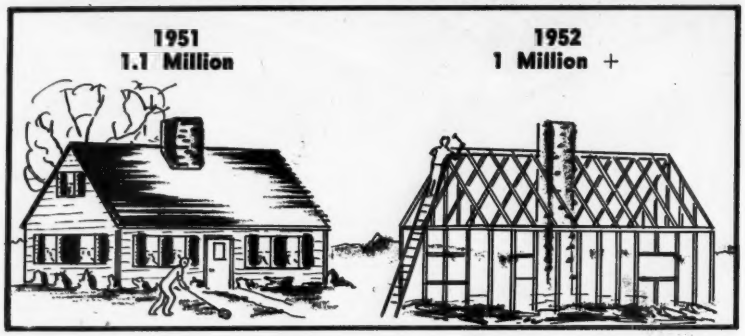
One of the chief reasons for the large stockpiles is Mr. Lewis. After the strike ended in 1950 with the coal reserves only 15-20 million tons, heavy buying added the present 75 million ton reserve which has since been maintained. Buyers didn't want another strike-fostered coal shortage, and today their position is strong.

Soft Coal Soft—Operators admit the market today is definitely soft. The price of coal has dropped since 1948 while costs of labor and materials have risen. The recent freight rate hike was absorbed by the already strained margin of the operators, too, largely through improved methods. In most areas coal is pegged 65 cents below the ceiling price fixed at 1948 when the higher freight rates were not in effect.

The result of the narrow margin has been to make competition extremely keen in the coal business and many smaller operators couldn't stand the gaff and have closed up. That means unemployment in many mining districts, short work weeks in a host more.

Miners, Black Outlook? — A strike could help re-establish the supply-demand balance which the

Ceiling Goes Up for 1952 Housing Construction



high production for stockpiling during 1950-51 upset, but it would have to be a long strike. The sacrifices and hardship of a long strike could threaten even Mr. Lewis' popularity.

Soft coal producers hope the Lewis demands will be temperate this year, and the logic of the situation makes his bargaining position weak. But users of coal say logic doesn't go when trying to fathom the mine chief's plans.

Mining Machinery Supply Tight

Mining machinery makers say they find themselves "in a maze of DO's, DX's and directives" as a result of particularly tight supply in their product. Latest paperwad to hit them: NPA asks for monthly shipping schedule statements to achieve better programming of urgent production and assure on-time deliveries.

NPA explains that the monthly schedules will serve as a guide for determining which companies can best handle new urgent orders without serious disruption. Particularly short items include: kilns, coolers and driers, crushers of all types, ball mills, mine hoists, screens and ore-dressing units.

Oil-Country Tubular Goods Cut

Oil and gas operators are authorized 147,194 tons of oil-country tubular goods in the third quarter of 1952 rather than the 265,476 tons of casing and tubing earlier announced in approvals of primary applications. "It would do little good to issue tickets for tubular goods that the mills won't produce," said Bruce K. Brown, deputy petroleum administrator.

Raising the Roof

Home builders now think they can start a million or more houses this year

THE CEILING on private home construction in 1952 has been propped up, corner by corner, until it now appears that at least 1 million new units will be started this year. Roof on construction could possibly go up as high as 1951's level of 1.1 million starts, but not up to the record level of 1.4 million made in 1950.

After a slow beginning this year, April starts of 98,500 units are 7 per cent ahead of April, 1951, says the Commerce Department. Total starts for the first quarter, 1952, are 6 per cent under 1951, with approximately 225,000 private units getting underway.

Another End Up—Customer demand, a changing-to-favorable government attitude and easing materials supplies are propping up three corners of private construction and the fourth corner is due to be raised within the next month or two when Regulation X is eased. Further shoring is added by the prospects of a new $900 million lid on authorizations to the Federal National Mortgage Association ("Fannie May") to buy FHA and VA guaranteed mortgages. Bulk of builders believe the loan guaranteeing action of Fannie May will encourage more mortgage money to come in circulation. Low interest, government-backed mortgage loans accounted for 34 per cent of the dollar volume of all new mortgages in 1951.

Relaxation of Reg. X is expected to stimulate building in the higher cost residential brackets where the greatest sales resistance is now being encountered. In the over-$12,500 house bracket down payments now range as high as 50 per cent for non-veterans and 45 per cent for veterans. Builders expect only modest reductions in down payments for houses in the lower brackets (up to $12,500) which are easiest to sell and hardest to build.

Question of Cost — The lower-priced houses are getting increasingly difficult to build because of rising costs—mostly labor costs. In fact, builders in some sections of the country have found themselves completely priced-out of the lower price brackets. In March the wholesale price index of building materials edged up 2 per cent, to a little more than 118 per cent (1947-1949 base). Prices for most building commodities are at or below the level of a year ago when the over-all index stood at 120.8. Union hourly wage rates of building trades workers rose 6 per cent to an average of $2.47 per hour during the first quarter, 1952, according to a trade survey of seven key trades in 85 cities. That is 18 cents above the level of July 3, 1950 and 26 cents above the Jan. 3, 1950 estimated level.

Less Construction Controls?

Further liberalization of controls on construction will be studied by a task group to be appointed shortly by NPA. The group will also consider possible means of permitting self-authorization of materials for multi-unit residential construction.

Construction representatives point out that they are having no difficulty in obtaining materials and believe control should be revised, but DPA says material requirements still exceed supply.

Record Outlays in Construction

New construction expenditures of $2750 million in May set a new record for the month, says the Commerce Department and the Labor Department. During the first five months of 1952, total new construction outlays aggregated $11.9 billion, 3 per cent over the total

for the same period of last year.

Public spending for new construction continued its upward climb, reaching $947 million in May. Public expenditures for atomic energy and defense plant construction are expected to exceed $1.6 billion in 1952, which will be about 70 per cent over 1951 outlays for the same purposes. Spending for military installations will increase by about 85 per cent to $1.9 billion.

Prestressed Concrete—

Broader field for wire and bars seen as its use expands in bridges and buildings

PRESTRESSED concrete, wire or bar reinforced, is making steady progress as a structural member for use in both bridges and buildings.

Massachusetts opened bids June 3 on 102 beams for four state bridges designed for prestressed concrete. Although that state has previously ordered two bridges of the material, work on the latest four is considered an experimental project, to be erected at Newbury and Newburyport, Mass.

Different—A different system of prestressing is designed for each bridge. John A. Roebling's Sons Co., Trenton, N. J., and American Steel & Wire Division of U. S. Steel Co. co-operate on one; Freyssinet Co. Inc., New York, handles the second; Preload Co. Inc., New York, the third; and Prestressed Concrete Corp., Kansas City, Mo., the fourth.

Carbon steel wire is used in the Roebling system, the average size for bridges being 0.196 in., although as large as 0.276 inch in diameter has been used. While dependent upon design and load, the metal required in prestressed members ranges from 20 to 40 per cent of total weight.

New Markets — Use of prestressed concrete is to some extent at the expense of structural steel. Prestressing opens a broader field for wire and bars.

Some 16 states now use prestressed concrete beams in bridges, and more volume is going into buildings.

S. L. CRAWSHAW
. . .new AGMA president

Cryolite Crisis Seen Soon

Waning natural cryolite deposits in Greenland, only world source for the material, make imperative a goal of 50,000 net tons of synthetic cryolite by 1955. The Greenland mines are not expected to be productive for more than another decade.

Cryolite is indispensable in the electrolytic reduction of aluminum since it is the only known substance which will dissolve alumina, the refined material obtained from bauxite to produce aluminum.

More plants must be built to produce cryolite or aluminum expansion will definitely be limited by its lack.

Navy Gets Magnesium Foundry

Transfer of the government-owned Eclipse-Pioneer Foundry of Bendix Aviation Corp. to the Navy should result in a substantial increase in the production of magnesium castings. The reason: An extensive program of machine-tool replacement and expansion of production facilities will be possible under the Navy's Bureau of Ships & Docks.

Although the Navy will supply the foundry with the machine tools and equipment, a major portion of the output of castings will be allotted to the Air Force.

Alloys Mesh in Gears

New gear alloys may be sought for civilian demand as defense takes current alloy supplies

DUCTILE IRON, boron steels and other new alloys could have a bright future as gear materials if current investigations prove successful, say gear designers and engineers.

At the 36th annual meeting of the American Gear Manufacturer's Association in Hot Springs, Va. last week, extended interest in untried gear materials was evidenced by the association's speeded program to correlate experience of member companies using conventional gear cutting facilities and working with promising substitute materials.

Research Ahead—S. L. Crawshaw, AGMA's incoming president, says one of the association's principal jobs will be to encourage, and even to initiate, basic research on materials. Coupled with materials research will be investigation of the best methods for machining and heat treating the new alloys tested.

Need for better materials for a given application will govern both the research and acceptance of the new materials among gearmakers. The use of alloy steel gears since World War II is up 50 per cent and the trend is toward use of gears of higher hardness; that means more alloys.

Defense Comes First—For defense application the needed alloys are available. It's the civilian applications that are feeling the pinch and will motivate the search for substitutes.

Gear cutting machinery may be a defense problem in the future. To find out whether we have enough for present and anticipated needs, NPA will conduct a survey of the nation's gear-cutting capacity, both the independent and captive.

In addition to Mr. Crawshaw of Western Gear Works, Lynwood, Calif., new president of the association, other officers elected at the meeting include: George H. Sandborn of Fellows Gear Shaper Co., Springfield, Vt., vice president; and R. B. Holmes of Link-Belt Co., Philadelphia, treasurer.

"Eager Beavers" Keep on Rolling

Reo Motors Inc. is in its third year of producing the 2½-ton, 6 by 6 Army truck known as the "Eager Beaver." Shown inspecting a packaging operation in the Reo plant in Lansing, Mich., are, left to right, W. A. Laurie, head of Ordnance legal branch, Detroit district; Col. P. M. Seleen, deputy chief, Detroit Ordnance District; Joseph S. Sherer Jr., Reo president, and A. W. Zimmer, Reo's vice president of manufacturing. Col. Seleen told company executives that he has never seen a poor performance report on the truck

Unrated Tools May Soon Be Shipped

Behind-the-scenes talk has it that the ban on shipments of machine tools against unrated orders will be lifted by the fourth quarter. Reason: Not enough rated backlogs

PREDICTIONS in Washington have it that the ban on shipments of machine tools against unrated orders will be removed well before the fourth quarter.

The relaxation would not lift the present requirement of M-41 with regard to defense orders, so the execution of any unrated orders would in no way defer the delivery of defense orders on the required dates.

Trouble Ahead—Unless such an amendment is made to the M-41 order, a bad situation looms for the machine tool industry, as many builders would be faced with the necessity of curtailing their production starting in the fourth quarter of this year. Such curtailments would be widespread in 1953, for only some two dozen companies have rated backlogs sufficient to last more than two years at the present volume.

Most companies have backlogs of unrated orders — but now cannot ship against them. In one extreme case a builder has a backlog of rated orders good for three years, and a backlog of unrated orders good for four years. Whether the unrated orders would stick if shipments are deferred to the 1955-1959 period is questionable.

A Help — Industry representatives predict that giving the green flag to deliveries on unrated orders would speed up, rather than retard, deliveries against rated orders. Permission to ship against firm, non-renegotiable orders from civilian customers eager to get the fastest possible deliveries would spur subcontracting and other means of swelling production—and this would mean less difficulty in meeting delivery dates for the rated orders.

More Help To Find Tools

TO THE EXISTING two groups in the NPA Metalworking Equipment Division for assisting rated users to locate hard-to-get machine tools, a third is being added by Ralph Howe, director.

This third group is to scan machine tool inventories and orders of military contractors whose production has been cut back; those tools found to be in excess of needs will be placed at the disposal of other contractors who can use them. Substantial numbers of tools not yet delivered are involved.

Inventory — Of the other two groups, one is the Metalworking Equipment Division's recently created Central Inventory Branch, of which Robert B. Kerr Jr., on leave from Johns-Manville Corp., New York, is chief. This group has been assigned supervision of the Armed Services Central Inventory formerly managed by the Munitions Board. It comprises some 35,000 tools owned by the Army, Navy and Air Force, and later is to include the idle tools owned by the General Services Administration, Maritime Administration,

SELECTED DEFENSE CONTRACTS IN EXCESS OF $150,000

PRODUCT	CONTRACTOR
Trucks, ½ Ton	International Harvester Co., Chicago
Motor Vehicle Parts	Precision Automotive Components Co., St. Louis
	Lipe Rollway Corp., Syracuse, N. Y.
Tractors	Caterpillar Tractor Co., Peoria, Ill.
	MR5 Mfg. Co., Flora, Miss.
Parts for Tractors	Caterpillar Tractor Co., Peoria, Ill.
Aircraft Parts	Glenn L. Martin Co., Baltimore
Magneto Assemblies	Scintilla Magneto Div., Bendix Aviation Corp., Detroit
Carburetor Parts	Niles-Bement-Pond Co., Pratt & Whitney Div., West Hartford, Conn.
	Holley Carburetor Co., Detroit
Shells, 20 mm	American Safety Razor Corp., Brooklyn, N. Y.
Shells, 60 mm	American Machinery Corp., Orlando, Fla.
Mortar Shells	Motor Wheel Corp., Lansing, Mich.
Boosters	Royal Typewriter Co., Hartford, Conn.
Primer Percussion	Humason Mfg. Co., Forrestville, Conn.
Cartridge, Grenade	Remington Arms Co. Inc., Bridgeport, Conn.
Cartridge Cases	Stoner Mfg. Corp., Aurora, Ill.
Metal Parts for Tracers	Allied Federal Screw Products Co., Newark, N. J.
Metal Rocket Container	Standard Container Inc., Montclair, N. J.
Periscopes for Medium Tanks	Mergenthaler Linotype Co., Brooklyn, N. Y.
Parts for Periscopes	Cummings Machine Works, Boston
Carriages, Medicine	Progressive Metal Products Co., Philadelphia
Audiometers	Maico Co. Inc., Minneapolis

Atomic Energy Commission, Defense Materials Procurement Agency and the Federal Security Commission.

Because the lists of tools within the purview of this Central Inventory Branch are not as dependable or informative as is necessary for practical purposes, John Mayer, on leave from Avco Continental Tooling Service, Dayton, O., has been appointed team superviser for Central Inventory, working directly under Mr. Howe.

Field Work — Mr. Mayer has organized a field staff of some 60 men from equipment-building and using companies and is sending them out as teams to examine the reported inventories. Their findings are reported to Mr. Kerr who lets the idle tools out to contractors on lease or on other terms arranged by the owning services; the tools are to be returned to the Central Inventory after the need for them has passed.

The other unit already in existence for helping contractors to obtain hard-to-get tools is the Metalworking Equipment Division's Used Equipment Available Tools Section, of which John K. Woll, on leave from Gary Machinery Co., Canton, O., is chief. Mr. Woll can offer help from a list of some 35,000 tools, including used tools in the stocks of dealers and rebuilders, used tools at colleges and institutions and new tools imported from abroad.

Licensing Delays TV Equipment

Television station licensing will determine the future material needs of the commercial broadcast equipment industry. It probably will be at least a year before the first heavy orders for new station equipment are placed. Most manufacturers had already placed orders for materials and parts in anticipation of a heavy flow of new station construction permits by the end of 1952.

Broadcasting equipment manufacturers report delays in fulfilling military contracts because of frequent changes in design, lack of information on spare parts required with military end-equipment and shortages of components.

CHECKLIST ON CONTROLS

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, Write to NPA Distribution Section, First Basement, New GAO Bldg., Washington 25. For copies of OPS orders, contact nearest OPS district or regional office. For copies of OPS news releases, write David S. Phillips, director, OPS Administrative Services Division, Temporary E Bldg., Washington 25.

Materials Orders

BRASS MILL PRODUCTS — Amendment of May 28, 1952 of NPA Order M-82 is to help distributors of brass mill products replenish their inventories with materials sold for military, Atomic Energy Commission and machine tool programs. The amendment also permits distributors to purchase surplus materials. The amendment was effective May 28, 1952.

COPPER WIRE PRODUCTS—Amendment of May 28, 1952, of NPA Order M-86 is to help distributors of copper wire mill products replenish their inventories with materials sold for military, Atomic Energy Commission and machine tool programs. The amendment also permits distributors to purchase surplus materials. The amendment was effective May 28, 1952.

LEATHER—The last remaining National Production Authority control on leather ended with revocation of NPA Order M-28 on May 27, 1952.

IRON AND STEEL MRO—NPA Order M-105 issued May 29, 1952, provides priorities assistance in procurement of materials for maintenance, repair and operating supplies in the iron and steel industry. The order was effective May 29.

Controlled Materials Plan

STEEL EMBARGO — Direction 12 to CMP Regulation 1 put a ban June 2 on shipments of steel from warehouses to manufacturers of consumer durable goods. The ban is to conserve steel during the steelworkers' strike.

Price Regulations

USED MACHINE TOOLS — Amendment 1 of Ceiling Price Regulation 80 provides new alternative methods for determining ceilings on used machine tools and used machine tool extras, extends geographic coverage of CPR 80 to include sales made in Alaska and Hawaii, and requires a guarantee to accompany sales of reconditioned items covered by CPR 80. Amendment 1 was issued May 28, 1952, and made effective June 2, 1952.

COKE, CHEMICALS, GAS — Amendment 8 of Supplementary Regulation 13 to the General Ceiling Price Regulation indefinitely extends the Office of Price Stabilization regulation covering the coke, coal, chemicals and coke oven gas industry that was to have expired May 31, 1952. Amendment 8 was issued on May 29, 1952.

MANUFACTURERS—Amendment 3 of Supplementary Regulation 17 to Ceiling Price Regulation 22 is to help manufacturers determine overhead cost adjustment in calculating ceiling prices under the Capehart amendment to the Defense Production Act. Amendment 3 was issued May 29, 1952, and made effective June 3, 1952.

CLARIFICATION—Amendment 47 of Ceiling Price Regulation 22 clarifies the exemption of manufacturers in certain fields from using Public Form 128 in reporting newly established ceiling prices for items not sold between July 1, 1949, and June 24, 1950. Amendment 47 was issued June 3, 1952, and made effective June 9, 1952.

SPRINGS, STAMPINGS—Amendment 2 of Ceiling Price Regulation 119 provides that new manufacturers of mechanical precision springs, metal stampings and screw machine products who wish to avail themselves of the "small orders" exemptions must use their first three months of operations as basis for determining their limit of exemptions for subsequent quarters, if they were not in business during the base period of Feb. 1, 1950, through Jan. 31, 1951.

Appointments in Washington

Kenneth S. Field, a member of Ebasco Services Inc., New York, and former assistant director, Materials & Equipment Division, Defense Electric Power Administration, was appointed acting chief, Major Equipment Scheduling Branch, Defense Electric Power Administration.

Roy M. Jacobs, on leave from Jones & Lamson Machine Co., Springfield, Vt., and Robert Morse, of Pratt & Whitney Division of Niles-Bement-Pond Co., West Hartford, Conn., were appointed as the Foreign Staff, Metalworking Equipment Division, National Production Authority.

New branch chiefs of the Metalworking Equipment Division, National Production Authority are: Sidney Akridge, Chrysler Corp., Detroit, Program & Expediting Branch; T. Ray Adams Jr., A. V. Wigins Co., Syracuse, N. Y., Product Distribution Branch; Robert B. Kerr Jr., Johns-Manville Corp., New York, Central Inventory Branch; Oscar Iber, Oscar Iber Co., Chicago, Industrial Supplies Branch.

Boron Steel: Tested for Planes

Special test heats of boron steels will be run shortly to determine the practicality of substituting boron steel for other types in airplane production. Proposed tests call for electric furnace production of five highly specified boron steels to be specially formed into bars, tubes and sheets. Each of the participating aircraft manufacturers will then be supplied the quantity needed for his tests through SAE Steels Co., acting distributor for the aircraft firms and the interested military agencies.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Heavy castings for aircraft presses will be bought from Europe . . . Water, heavily used by most industries, may be in short supply one of these days . . . Shipping needs aid

LARGE CASTINGS required for the 17 mammoth presses to be built for the Air Force will be procured from European foundries (see STEEL, Apr. 7, p. 87). A joint Air Force-DPA-NPA mission learned a number of foundries in England, France, Germany and Italy can make steel castings up to 176 tons, and also have facilities for machining them.

The orders to be placed with the European foundries will be negotiated directly by the contractors, principally the Loewy Construction Co., New York, which has the contracts for nine of the presses.

Placing orders in Europe should not affect foundries in the United States capable of making the parts, says DPA, since they are already jammed. But European production of the parts should result in speeding the aircraft light-metal forging program.

Newest Worry: Water . . .

Water, used heavily in nearly all industries, is the subject of concern in Washington. According to a Department of Agriculture study, increases in water demand are 25 to 50 per cent ahead of increases in population. And our population —now well over 150 million — should reach 190 million by 1975.

To meet this growing thirst, three things are necessary: One is an intensified program of developing watershed systems and river basins to prevent flood damage on the one hand and permit full utilization of our rainfall on the other — that means vast additional construction of dams and water storage systems; the second is development of an economical process for converting sea water into potable water; third is the necessity of modifying present industrial processes so they will use less water.

Industrial use of water is enormous. Nobody has accurate figures, but the sum total would be of astronomical proportions. Water is used in quantity in substantially all industries and in huge quantities in many of them—as steel, chemical, coal, paper and so on. Government men say it takes 65,000 gallons of water to produce a ton of steel.

SHIP SUBSIDIES SKIMPY
. . .even spuds get more help

Shipping Needs Subsidies . . .

The government spent more than $477 million keeping up prices on Irish potatoes from 1933-1951. During the same period it spent only $377 million in shipbuilding subsidies. As a result, says Rear Adm. Homer N. Wallin, chief, Navy Bureau of Ships, the merchant marine has not regained its rightful place in world commerce and small private shipyards are in danger of being lost to the nation as emergency reserves.

"The Merchant Marine Act of 1936 has run up against too much confusion and inconsistency of interpretation to offer inducement sufficient to get the ships built," he says, "and a national program is needed that will encourage private enterprise to build passenger and cargo ships in an orderly, regular manner that will ensure a stable industry and will eliminate the nightmare of block obsolence."

Civil Arms Procurement? . . .

Could unification of armed forces procurement be better achieved by a centralized civil authority? Rep. Wright Patman (Dem., Tex.) advanced this idea last December and now his House Small Business Committee is working on a bill to be referred to the House Armed Services Committee. The committee appears solidly for such a measure, and Reps. Patman, Seely-Brown Jr., and Hill have advocated the proposal in speeches. The Small Business Committee hopes to lay the groundwork for favorable action on the measure at the next session of Congress.

Another proposal on which the House Small Business Committee is working would establish 35 per cent as the minimum portion of armed services procurement that should go to small business.

Advisory Function Shifts . . .

The Munitions Board continues to disband advisory committees in those industries adequately under study by the National Production Authority. MB industry advisory committees no longer in existence: Machine tools, foundry, aluminum and magnesium, additive, alloys, cotton, drug resources, iron and steel, leather, medical and dental resources, rubber, synthetic fibers and silk, and wool.

New FTC Head . . .

Albert A. Carretta, nominated by President Truman to complete the unexpired term of the late William A. Ayres as Federal Trade Commissioner, is a Washington lawyer who also lectures in corporation law and finance at Catholic University of America and at the School of Foreign Services, Georgetown University.

BAKER TRUCKS require LESS MAINTENANCE

to you this means

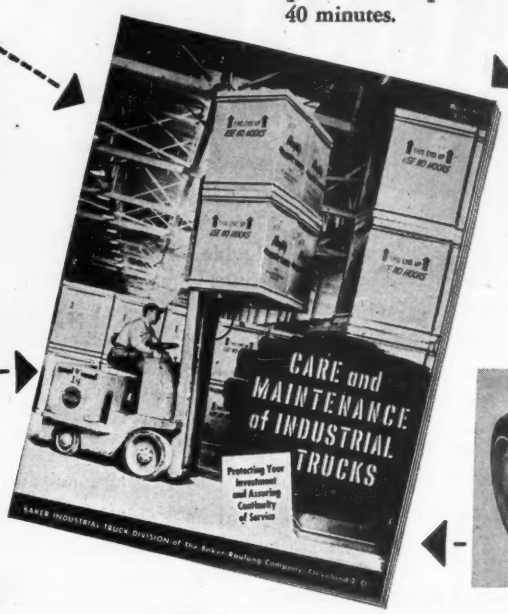
- LESS TIME OUT OF SERVICE
- TOP OPERATING EFFICIENCY
- LOWER OVERALL COST

Baker Trucks are engineered and constructed to give maximum trouble-free service, and designed with many features for easier preventive maintenance and quicker, less costly repairs, when necessary. For example:

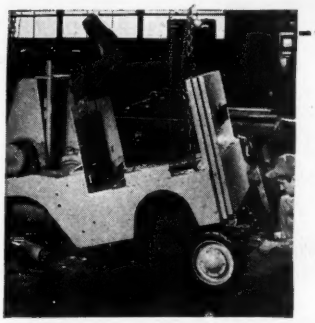
Electric dynamic braking saves wear on brake linings and protects drive axle and other moving truck parts by smoother, safer deceleration. Service brakes can be adjusted in 5 minutes, and relined in 30 minutes.

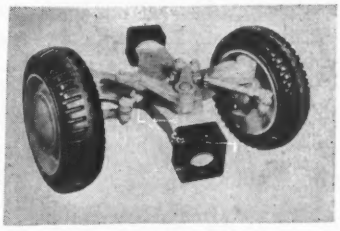
Baker exclusive Worm Drive Power Axle has fewer moving parts, is less subject to wear and does not lose efficiency with heavy loads or after long use. Mast assembly can be removed in 20 minutes and power axle pulled in 40 minutes.

Baker Rubber-mounted Trailing Axle is the simplest in use on industrial trucks. Can be removed from truck in less than 20 minutes by disconnecting steering tie rod and removing 8 bolts. Proper steering geometry prevents "scrubbing" of tires and means longer tire life.


CARE and MAINTENANCE of INDUSTRIAL TRUCKS
Protecting Your Investment and Assuring Continuity of Service
BAKER INDUSTRIAL TRUCK DIVISION of the Baker-Raulang Company

Use of jumbo rubber blocks to absorb twisting axle action and road shocks eliminates need for spring connections. Blocks require no attention. Steering connections are above axle where they are protected from damage. Wheel bearings easily examined.





The above are 4 of the 60 illustrations from the new 16-page picture-story manual "Care and Maintenance of Industrial Trucks." *Write for your copy today.*

The Baker-Raulang Company
1259 West 80th Street • Cleveland 2, Ohio

☐ Please send me Bulletin 2100—"CARE and MAINTENANCE of INDUSTRIAL TRUCKS."

☐ I am also interested in_____pound capacity fork trucks.

Name_____ Title_____

Company_____

Address_____

City_____ State_____

Baker INDUSTRIAL TRUCKS

STRONGER
than mild steel
MACHINES
twice as fast

DUCTALLOY is especially valuable for intricately shaped pressure castings with many machined surfaces such as this fire control housing casting.

DUCTALLOY, the new cast iron that bends without breaking, possesses many new, outstanding advantages, one of which is remarkable machinability.

In the annealed condition it has a guaranteed minimum tensile strength of 60,000 psi, yet it can be machined at a cutting speed of 980 fpm, more than double the rate for grade B cast steel and 2 to 3 times that of class 40 gray iron under identical conditions. The machined surface compares favorably with that of steel.

DUCTALLOY can be cast in intricate shapes with close tolerances and less machining stock than cast steel—it is particularly valuable for pressure castings which remain tight at hydrostatic pressures higher than the shattering point for any gray or alloyed cast iron.

There are many applications in which DUCTALLOY will render better service and contribute to lower costs in the finished product through savings in labor and machining time. Write for information.

AMERICAN Brake Shoe COMPANY

BRAKE SHOE AND CASTINGS DIVISION
230 Park Avenue, New York 17, N. Y.

Foreigners Await Impact of Steel Strike

A walkout in the U. S. steel industry is anything but a domestic affair. Loss of American steel production will have sharp, though varying, effects on most European countries

HOW WILL the strike in domestic steel production affect the foreign steel producers and consumers? Some consumers, like the United Kingdom, will mourn and some producers, like Belgium, will rejoice. All will watch developments in the United States with close attention.

Buyers—Great Britain is relying heavily on the second half shipments of swap steel (STEEL, Jan. 21, p. 43) to meet defense needs as well as those of industries like shipbuilding, power plant erectors, locomotive and railroad car builders and the automotive industry. A prolonged strike, drying up this source of semifinished steel, would leave England with desperate steel shortages.

At the present time British rerolling mills are limited to a four-day work week.

All buyers of U. S. steel now face the prospect of having their orders frozen at the water's edge. In many cases that steel is intended for military programs.

Sellers — Belgium, Luxemburg and France have found the U. S. an increasingly difficult market to sell for the past several months. As the domestic steel supply eased, foreign producers lost their biggest selling point — availability. Belgium, for one, was forced to cut prices to induce sales to the dollar zone. Latest reduction: $115 per metric ton for merchant bars to the dollar zone, $135 per metric ton for the same bars to other members of the European Payments Union.

Some other reductions as of late last April: To $150 per metric ton for galvanized wire and to $155 per metric ton for barbed wire for sale to the dollar zone.

Belgium has also recently cancelled its export tax for steel shipments payable in dollars.

Competitors Improve — A steel strike now will reverse the trend of the past several months. As U. S. steel disappears from the market or as the price rises, Belgium steel's competitive position will improve.

All steel prices on the international market are likely to rise somewhat with the rise in American prices. That's why the whole world is watching developments in our domestic steel strikes.

Jamaican Bauxite Arrives

First commercial shipment of Jamaican bauxite arrived in Mobile, Ala., last week for eventual use at the Hurricane Creek, Ark., plant of Reynolds Metals Co. Reynolds estimates bauxite reserves in Jamaica at more than 300 million tons.

Aluminium Ltd. of Canada and Kaiser Aluminum & Chemical Corp. expect to get the first production from their bauxite mines in Jamaica later this year.

Machine Tool Imports Grow

J. Herbert Myers, Lodge & Shipley Co., told the spring meeting of the National Machine Tool Builders' Association: "Inflation, legislation and regulation are closing the door, and tightly, to many machine tool builders' markets. Our (U. S.) high wages of $1.75 upward do not compete with Europe's 30 cents to 55 cents per hour or to Japan's 35 cents per hour for labor to build tools."

According to the Commerce Department's Foreign Trade Report 110, imports of foreign machine tools since 1946 total as follows:

1946	$1,060,950
1947	929,293
1948	1,826,084
1949	1,597,100
1950	2,291,042
1951	13,703,655

Trade: Tie that Binds

One of the invisible threads which tied West Germany to the West even before the recent treaties were signed was import-export trade. In 1949 West German exports were valued at $1123 million and imports at $2237 million. In 1950, exports rose to $1977 million and in 1951 partial balance was achieved with exports of $3474 million and imports of $3503 million.

Since 1949 West Germany's export trade has grown about 70 per cent while that of Great Britain has grown only about 7 per cent. The U. S. has had much to do with Germany's amazing growth in the international marketplace. In 1950 U. S. exports to Germany, including some to East Germany, were $439 million and imports were $104 million. In 1951, the export volume was $519 million and imports rose to $229 million.

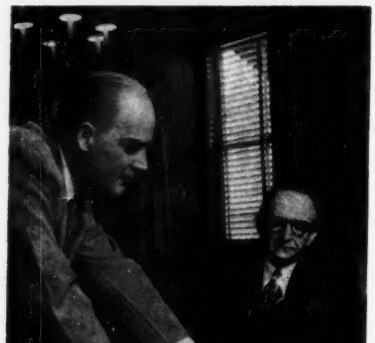
Wide World

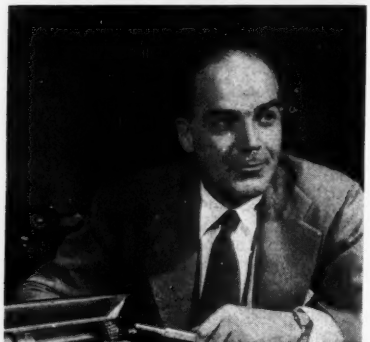
Sumatran Oil Flows

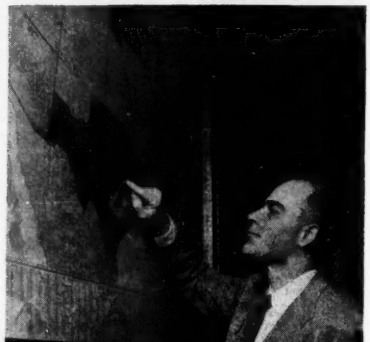
In 1939, American interests discovered oil in Sumatra after more than 12 years of searching. Today, one war and 13 years later, Caltex Pacific Petroleum Maatschappij, an American-financed company, is shipping oil from 33 wells developed since 1950

Foreign Aid Nears Approval

The Senate-House conference committee has approved a foreign military and economic aid bill totaling $6,447,730,750 for the fiscal year starting July 1. Both the Senate and the House must approve of the recommendation before it becomes law. The House previously voted about $6 billion and the Senate $6.7 billion.







D. E. Davidson, sales vice president, checks with his chief, Link-Belt President R. C. Becherer (photo, left), points out fine points of a new product (center) and makes a geographical check of sales distributors (right)

Life with a Salesman

David E. Davidson, vice president for sales of Link-Belt, thinks salesmen will be ready to do their part in any difficult times ahead

"HAVE SALESMEN forgotten how to sell?" David E. Davidson, vice president for sales of Link-Belt Co., doesn't think so. "I'm tired of hearing about how soft salesmen have had it for years and how they'll be unprepared to meet tougher conditions ahead," he said. "Our salesmen aren't soft and neither are many of those from other companies."

Mr. Davidson, a slender, graying man, swung around in his swivel chair to face more directly three of his chief aides, Albert C. Fellinger and Laurance O. Millard, assistant general sales managers, and William J. Nighbert, manager of district offices. He had just called them in to iron out matters concerning Link-Belt's continuing sales training program.

Matter of Morale — Such meetings are not part of the usual routine the first thing on a foggy Chicago morning, but these days Dave Davidson frequently feels the sentiments he had just expressed. As the man responsible for the sales policies and sales leadership for a company that did $118 million worth of business in 1951, his plans are based on the morale of Link-Belt's 400 salesmen and their ability to meet tougher conditions ahead.

"Regardless of general business conditions," he was saying, "we're aiming to do as well in 1952 as last year." The four men went on to discuss ways and means of accomplishing that. One method is through a continuous program of training new men and retraining sales personnel already on the job. It normally takes about five years to train a sales engineer, but immediately following the war, when there was a shortage of trained engineers, Link-Belt, by concentrated sales training, reduced the period of time considerably. Sales engineers handle the bulk of the company's engineering contract work, an important part of its total volume. The salesman handling regular product sales needs a different type of training, usually requiring less time at the plant.

Know the Product — Both sales engineers and salesmen get plant training so they will understand what Link-Belt makes and how to apply the product. That's no simple job at Link-Belt for it makes 536 different products, some of which have literally thousands of models and sizes. In addition, Link-Belt's engineering contract business includes a large volume of made-to-order equipment and installations. These range from a multi-million-dollar ore conveying job overseas to a 75-cent grease cup.

Its products are used somewhere in almost every industry, so that its sales organization is expected to be familiar with all phases of industrial activity. The company employs 10,000 in the U. S. where it has 13 plants and is building the fourteenth.

His Day—Mr. Davidson has the sales responsibility for Link-Belt products (except the subsidiary Link-Belt Speeder cranes and shovels) in the U. S. and abroad, except for Canada. The subsidiary, Link-Belt Ltd., handles Canadian sales. What does a man in such a position do? No day is typical, but one started with that morning meeting.

He and the three aides discussed retraining for more than an hour. Details were worked out to bring in certain salesmen attached to

the 41 district sales offices to the company's Chicago plants for ten days of lectures and shop refresher sessions.

Engineering Background—Even though all the men in the sales department are not sales engineers, most of them have engineering background and some have had shop experience. The boss himself was graduated in 1924 with an engineering degree from Armour Institute of Technology (now Illinois Tech.). Since that year he has been with the company—until 1935 in an engineering capacity, in district sales from 1935 to 1946, in various plant executive jobs from 1946 to 1950 and as a vice president for sales since 1950.

"Engineering training, and knowledge of shop practice, are virtually essential when you sell capital goods," he says. "You can't sell power transmission machinery and many of the other things we make the same way you sell a household appliance." He weighs the engineering training carefully when taking on new men or shifting others.

Word from Washington — The morning conference was just breaking up when Mr. Davidson received a call from the company's Washington representative. The matter had to do with a new regulation by the Office of Price Stabilization that might affect a Link-Belt product. Like most executives (for problems of a purchasing agent, see STEEL, Apr. 14, P. 72), Mr. Davidson spends a lot of time with government red tape. He also must go to Washington occasionally on company business and has attended various meetings of Conveyor Manufacturers' Industry Advisory Committee. Link-Belt has some direct defense work, but because it is a capital equipment producer, most of its volume is defense-supporting.

After the Washington phone call, Mr. Davidson spent the rest of the morning on the extending of contracts with the many industrial and oil field distributors who handle some of Link-Belt's products. Other distributors handle the firm's automotive timing chains, and still others confine their attention to Link-Belt's ball and roller bearings, and agricultural chain. Some 130 distributors handle Link-Belt's regular line. Although all those agents account for only a small portion of the firm's aggregate sales, they are nevertheless very important in the sales picture.

Contract Jobs—At noon the vice president lunched with the company's executive group in one of its weekly sessions, to discuss matters of company policy and problems of sales management in particular.

After lunch, he went back to his office to find a note to make a long-distance call. It concerned a subcontract Link-Belt had awarded in an industrial plant construction project. The company is equipped to handle many construction jobs completely itself because it has its own steel erection department, but it subcontracts occasionally, especially in these busy times.

Co-ordination—Next, there was a discussion with Richard F. Bergmann and Harold L. Hoefman, vice presidents for engineering and manufacturing, respectively. Many a manufacturing or engineering problem has sales implications and vice versa. Salesmen in the company frequently have ideas for completely new or newly designed products. This conference concerned a recently developed product now ready for marketing.

Next on the agenda for the sales vice president was a date with Robert C. Becherer, new president of the company. They went over sales statistics and discussed future prospects. "Our wide range of products," says Mr. Becherer, "helps to assure our stability. Demand for all products would rarely be off at the same time. But to sell such a variety, we have to use every sales technique in the book."

Statistics — Because ordinary market research data and methods are inadequate for industrial durable goods, the company uses a comprehensive analysis of all sales as a guide in sales planning.

Back in his office, the vice president found a note to call an old friend and customer in southern Indiana, won when he was Indianapolis district sales manager. The man is a coal mine operator and uses Link-Belt coal preparation equipment. Mr. Davidson promised

to call on him late in June. The Link-Belt executive is on the road about 20 per cent of the time, doing both customer and administrative work. But when in Chicago, most of his attention is taken with administrative affairs.

Pleasure — Like many men in sales work, Mr. Davidson is a fisherman. Unlike many, he is no golfer—not through lack of ability, but through lack of time. Even his fishing is spasmodic—his vacation last year was interrupted three times.

He is interested in education, both through the company's engineering trainees and through his own son, now a student at Purdue.

Mr. Davidson wants his son to have an engineering education because he believes that can be a good base and background for many fields, including sales. "It improves the quality of a salesman," he says, "and quality more than quantity is what we need among sales personnel today, tomorrow, anytime."

Demand Lack Hits Seattle Shops

Lack of consumer demand, not shortages of material, is the main problem facing small plants in the Seattle area.

That fact was developed by a survey by the Washington Employment Security Department for the Industrial Utilization Committee. Of 1291 small shops checked, accounting for about 10 per cent of Washington state's manufacturing employment, 288 reported an employment drop in the year ended Mar. 31, 1952. The loss reduced the group's employment from 20,120 to 15,887 in the year.

Lack of consumer demand was listed by 43 per cent as the cause of less employment; shortage of materials was cited by 7 per cent; unfavorable freight rates by 6 per cent.

Reduce the use of critical alloys in gas turbine structures

N-A-X AC9115 ALLOY STEEL offers a means of reducing the use of critical alloy steels of the "stainless" type in gas turbine and similar applications. In specific cases it has replaced over half the amount of strategic material originally required, with no sacrifice of quality.

N-A-X AC9115 ALLOY STEEL has high strength and toughness values at temperatures ranging from −70° F. to +1,000° F. It can be readily cold formed into the most difficult shapes; its response to welding by any process is excellent. It must, however, be suitably coated for protection against cold or hot corrosion.

N-A-X AC9115 ALLOY STEEL is available in bars as well as flat rolled products. Investigate the outstanding properties and characteristics of this steel and, through its use, conserve the critical material so necessary to our nation.

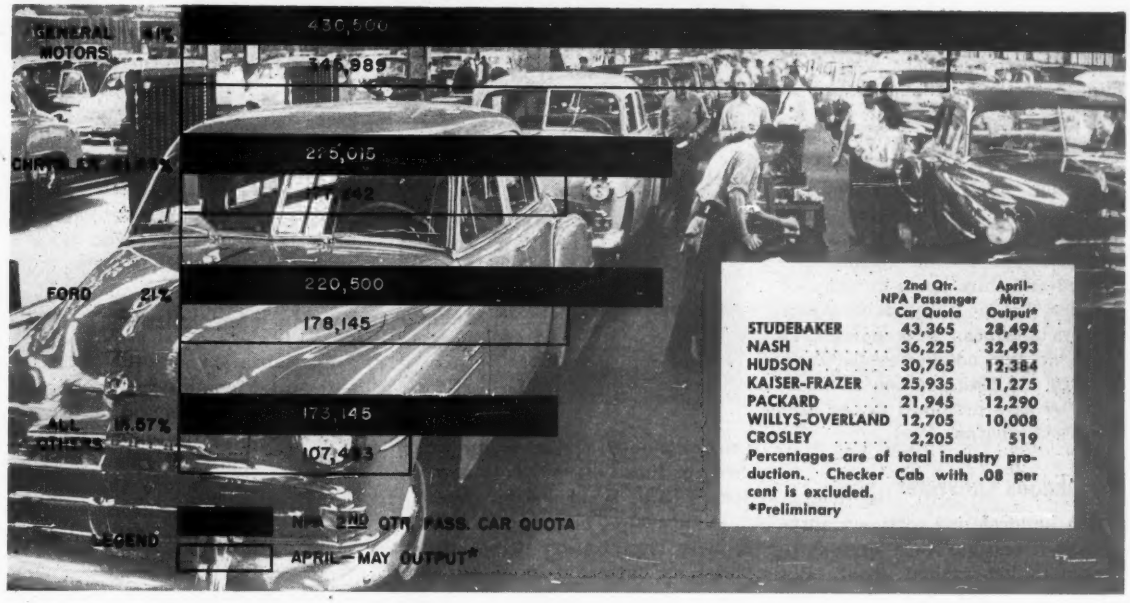
with N-A-X AC9115 ALLOY STEEL

GREAT LAKES STEEL CORPORATION
N-A-X Alloy Division • Ecorse, Detroit 29, Michigan
NATIONAL STEEL CORPORATION

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom

What Do Quotas Mean?



	2nd Qtr. NPA Passenger Car Quota	April-May Output*
STUDEBAKER	43,365	28,494
NASH	36,225	32,493
HUDSON	30,765	12,384
KAISER-FRAZER	25,935	11,275
PACKARD	21,945	12,290
WILLYS-OVERLAND	12,705	10,008
CROSLEY	2,205	519

Percentages are of total industry production. Checker Cab with .08 per cent is excluded.
*Preliminary

This month will be a big one for the automakers. They plan to produce more cars than in any month except one of the last five . . . Big changes are ahead for Chevrolet

DETROIT

THIS MONTH production is being geared at a higher level than has characterized all but one month of the past five. Kaiser-Frazer, for one, has now virtually eliminated its stock of unsold cars and plans to step output up from the present 280-a-day schedule to 350 at mid-month.

Two-Way Stretch — It is not alone. Study of the charts showing April-May output in contrast with NPA April-June quotas for the individual companies indicates that five of the ten automakers will exceed their quotas by a substantial margin when they build their last cars this month. This will be done in one of two ways: By catching up with first quarter's unfilled quota (Ford and Nash); by building against third quarter's quota (Chrysler, Willys and GM).

There seems to be little fear in General Motors that the forward borrowing will have to be paid back. The automakers' plans will go aglimmering if steel inventories get dangerously low. Attempts at fortifying stocks were mostly futile in the span between strikes. Deliveries were behind schedule when the strike started last Monday. There was little glib talk last week about being able to get along for 30 days without replenishment.

Ups and Downs — Despite an over-all reduction of 31 per cent in automaking so far this year as compared with 1951, a close look at individual performances turns up some interesting facts. One is that five makes of cars—Hudson, Kaiser and Henry J combined, Willys, Lincoln and Crosley—were produced in greater volume last month than in May 1951. Three other makes—Nash, Cadillac and Packard—were only slightly off of

Output of U.S. Passenger Cars

	1952		1951			1952		1951	
	May*	Five Months*	May	Five Months		May*	Five Months*	May	Five Months
CHEVROLET	81,600	380,063	103,481	537,076	DESOTO	8,435	41,199	14,510	51,590
FORD	68,600	294,424	83,149	445,852	CADILLAC	8,840	38,220	8,987	47,280
PLYMOUTH	43,600	201,187	65,601	302,263	HUDSON	5,400	34,945	5,269	72,031
BUICK	29,700	138,811	37,587	194,624	PACKARD	6,000	27,734	6,879	39,557
PONTIAC	25,300	117,235	31,980	165,100	KAISER-FRAZER	5,600	26,094	5,372	66,281
DODGE	22,600	108,918	32,989	155,525	WILLYS-OVERLAND	4,950	24,410	2,389	15,451
OLDSMOBILE	21,100	98,130	26,401	136,982	LINCOLN	3,480	12,636	2,492	13,059
STUDEBAKER	13,800	76,037	19,922	110,929	CROSLEY	260	1,256	182	3,081
MERCURY	15,800	70,820	22,287	115,778					
NASH	17,000	55,883	17,077	76,111	TOTALS	393,815	1,803,360	506,545	2,624,911
CHRYSLER	11,750	55,358	19,991	76,341	*Preliminary. Source: Ward's Automotive Reports.				

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

last May's pace. It is significant, though, and indicative of the presently better sales tone that three of the five car makes which this May beat last May's figure show the deepest production decline when the comparison is extended to a five-month period. At two extremes—the company which has slipped farthest productionwise in the five months and the one increasing sharply — are Kaiser-Frazer and Willys-Overland, K-F's five-month showing being 60.6 per cent down and W-O's being up 58 per cent. Lincoln is off a scant 3.2 per cent; Cadillac and DeSoto take second and third spots in terms of smallest five-month production percentage declines. In so doing they move up two notches respectively to 13th and 12th position as measured by cars produced in the first five 1952 months.

Ford Edges Chevrolet

One hundred and forty-six autos usually is nothing for a large automaker to get excited about. But when that is the edge which Ford has over Chevrolet in the last tabulation of new car sales, the respective jubilation and teeth-gnashing are audible from one end of the country to the other.

This is the status of the two rivals on the basis of new car registrations in 27 states for April.

In the Long Run—The scales do not tip in Ford's favor over any kind of extended period, and with Chevrolet outproducing Ford it seems highly improbable that the Ford battle cry "Beat Chevrolet" is anything but a fond hope.

The sales reports, however, are not being brushed aside by Chevrolet. That GM division has turned on full heat under all its activities. Well known now is the fact that the original plans for the 1953 model have been completely scrapped because of the public acceptance of the new Ford. A heavily guarded secret is just how far in Chevrolet's advance planning it has had to go to come up with a 1953 model. It is rumored in automotive circles that not only have the original 1953 plans been thrown out but also the 1954 and 1955 designs. Thus when the new Chevrolet appears on showroom floors in late fall it will be the 1956 model, minus the V-8 engine which was in those plans. This now appears to be scheduled for 1954s.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,692	658,918
March	517,206	792,550
April	576,504	680,281
May	550,000*	695,898
June		653,682
July		522,858
August		571,442
September		505,758
October		558,971
November		480,199
December		402,729
Total		7,179,161
Week Ended	1952	1951
May 3	130,108	154,523
May 10	130,509	180,577
May 17	129,914	156,127
May 24	127,723	158,259
May 31	103,722	121,476
June 7	130,000*	152,656

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary

Upheaval—The changes in Chevrolet's organization setup are at least as important as those being made in the appearance of the car. Since February the division's structure has gone through an upheaval. Latest evidence of this is the creation of two new assistant chief engineering posts and the organization of a research and development section within the engineering department.

The two new assistant chief engineers—H. F. Barr, formerly assistant chief engineer at Cadillac, and E. G. Sprung, Chevrolet chassis engineer—will head up respectively engine and passenger car chassis engineering and truck chassis engineering. With Mr. Sprung's appointment truck engineering is separated from passenger car work. Mr. Barr has an all-around reputation in engine and chassis work but is most closely associated with Cadillac's V-8 engine development.

Research Shift—The new post of director of Chevrolet research and development has been handed to Maurice Olley, developer of the original knee-action front-wheel suspension system for GM, who has been chief resident engineer of GM's British Vauxhall Motors Ltd. The naming of a small-car expert for this important post touches off speculation that Chevrolet is again considering such a vehicle, but his international reputation for suspension development bodes more work in this direction than toward a small car.

Ford's advance over Chevrolet saleswise is believed to be only momentary. Chevrolet dealers report a growing shortage of cars in the field. And their situation is not unique. After months of dragging, the new car market has perked up. Sales by the automakers to their dealers climbed to a 1952 peak in April; sales by the dealers for the month are expected to be the highest in seven months when the final tally is made.

Too Much Specialization?

Specialization in the field of automotive engineering may have developed to too great a degree. That is one of the implications of a highly significant paper presented last week before the Society of Automotive Engineers at their summer meeting in Atlantic City.

The engine men and the transmission men have gone their separate ways, each building better products but neither integrating their work completely with the other.

If they would do just that, in the opinion of authors D. F. Caris and R. A. Richardson of the Research Laboratories Division, General Motors Corp., some phenomenal gains in fuel economy would result.

Their "Paper Study" relates known gains (in the neighborhood of 25-35 per cent) from the use of high-compression experimental engines with likely gains to be had from an "ideal" automatic transmission (which by itself could also effect an equal gasoline saving.) The two in proper combination, they think, could bring about a total saving in gas of 45-60 per cent at no sacrifice in car size or performance.

What would the "ideal" transmission offer that present ones do not?

The authors list two requirements: It would automatically provide the ideal ratio for every driving requirement; it would take advantage of the inherent economy of the engine while providing required performance in acceleration and hill-climbing ability.

THE NEW BRITAIN MACHINE COMPANY

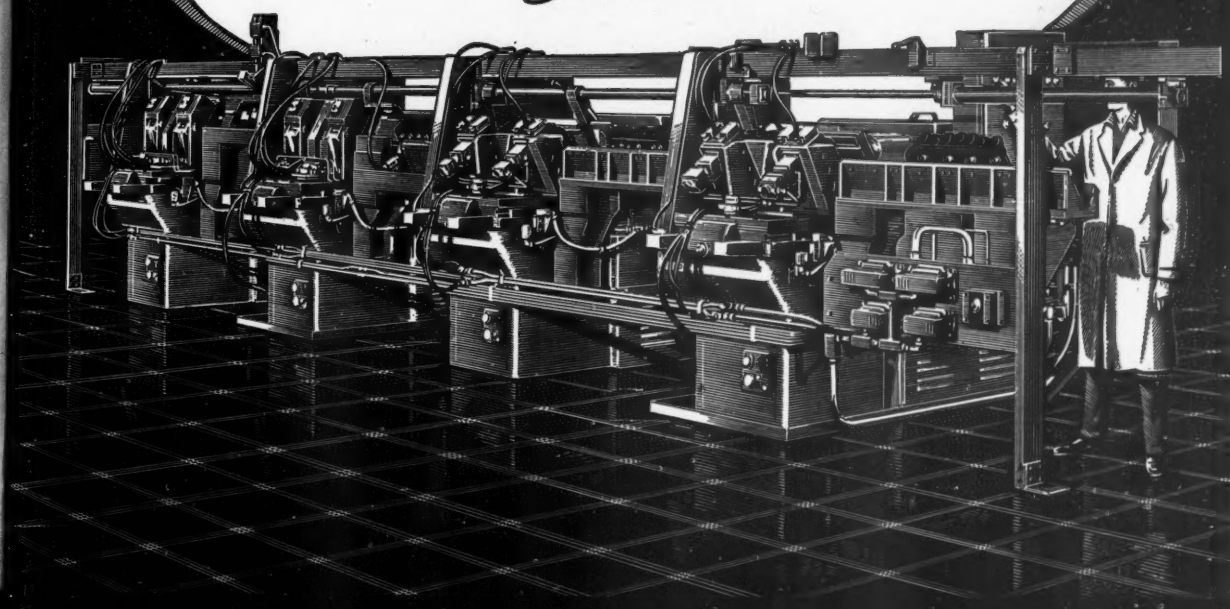
NB

What names come to your mind when you think of progressive manufacturing?

MOST of the ones you think of first have bought New Britain Automatics within the past few years for new and better ways of doing important metalworking jobs. The New Britain-Gridley Machine Division, The New Britain Machine Company, New Britain, Conn.

AUTOMATIC BAR AND CHUCKING MACHINES • PRECISION BORING MACHINES
LUCAS HORIZONTAL BORING, DRILLING AND MILLING MACHINES

NEW BRITAIN
Automatics



The best of a bumper crop . . .

HIGH PRODUCTION OF HEAVY-DUTY BUMPER GUARDS CALLS FOR SHARON* QUALITY DEEP-DRAWING STEELS

Tough, shock-absorbing bumper guards must be decorative as well as functional. Their manufacture demands heavy gauge steel that will take a deep draw easily without showing strain.

Many leading manufacturers of bumpers and bumper parts specify Sharon bumper steels whenever possible, for their experience tells them they can expect uniform top quality steel that can be easily deep drawn at mass production speeds without a trace of strain to blemish the finish.

For quality steels in large quantities specify Sharon and you'll be sure of the finest.

*Specialists in STAINLESS, ALLOY, COLD ROLLED and COATED Strip Steels.

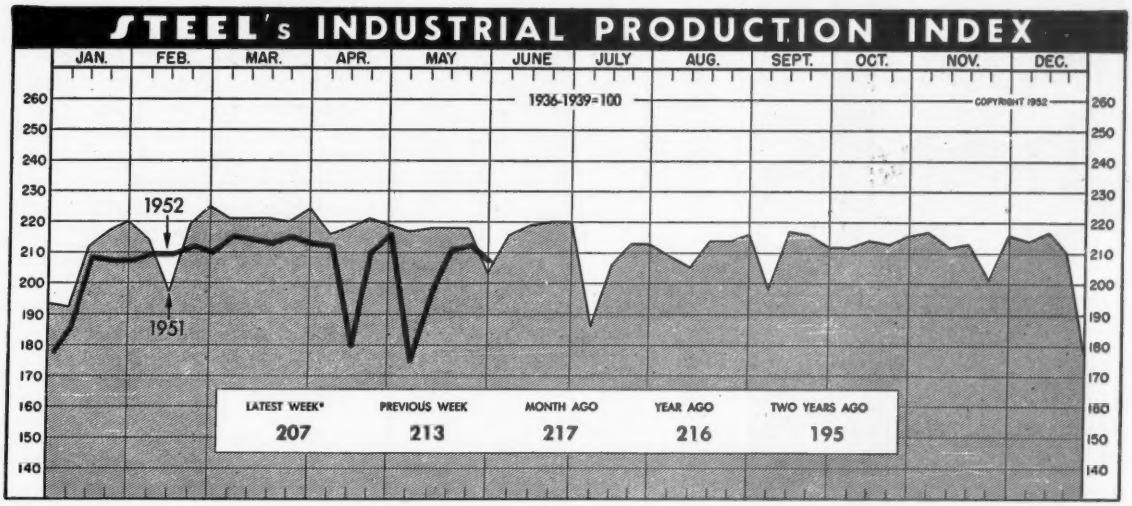
SHARON STEEL CORPORATION

Sharon, Pennsylvania

DISTRICT SALES OFFICES: CHICAGO, ILL., CINCINNATI, O., CLEVELAND, O., DAYTON, O., DETROIT, MICH., INDIANAPOLIS, IND., MILWAUKEE, WIS., NEW YORK, N. Y., PHILADELPHIA, PENNA., ROCHESTER, N. Y., LOS ANGELES, CALIF., SAN FRANCISCO, CALIF., MONTREAL, QUE., TORONTO, ONT.

For information on Titanium contact Mallory-Sharon Titanium Corp., Niles, Ohio

SHARONSTEEL


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1936-1939=100
COPYRIGHT 1952
260 250 240 230 220 210 200 190 180 170 160 150 140
1952
1951
LATEST WEEK* 207
PREVIOUS WEEK 213
MONTH AGO 217
YEAR AGO 216
TWO YEARS AGO 195

Week ended May 30

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

Industry heads toward summer doldrums as new orders fall off and labor troubles loom. Activity index drop reflects production cutbacks during holiday weekend

BUSINESS may find itself caught in the doldrums this summer. Unfavorable trends continue to shape up and offset the step-up in business activity brought on by defense.

Cutbacks — Even though the spiral inflation apparently came to a temporary halt and prices started to drift downward, the hoped-for upturn in manufacturing and retail activity just didn't appear this spring. And the chances are dim for a gradual bettering of business conditions in the next few months. The Commerce Department reports that new orders for manufactured goods totaled $22.8 billion in April, a decline of 1 per cent from March. And reports of cutbacks in civilian production give little indication that this trend is being reversed at present.

Of course, any forecast of near-future conditions hinges on the outcome of the steelworkers' strike. Most producers of durables have enough steel supplies to maintain present operations for several weeks. But a quick steel settlement might spell out near disaster to many other industries if demands for higher wages fan out across the nation. Substantial wage boosts would mean higher prices on goods which manufacturers now are having a hard time selling.

Index—Reflecting the production declines brought on by the Memorial Day Holiday, STEEL's industrial activity index in the week ended May 31 dropped 6 points to 207 per cent of the 1936-1939 average. While steel production remained unaffected by the holiday, freight car loadings and auto-truck production showed substantial declines from the previous week. Electric power generation also dropped below output during the previous week.

Auto Output Dips . . .

The auto industry was gunning for another high production month in June, before the steelworkers took their third walkout of the season. U.S. plants were expected to assemble about 400,000 passenger cars this month, just under the high-for-the-year April volume. This performance would bring second-quarter output to 1,209,000 passenger cars, a 21 per cent rise over the 994,000 units assembled in the first three months of 1952.

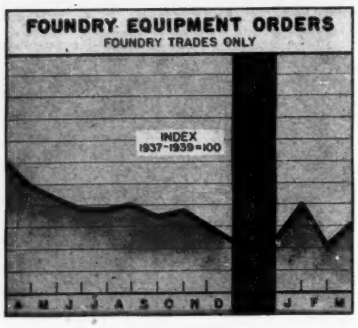
With the Memorial Day weekend paring operations, U.S. and Canadian plants turned out 103,722 cars and trucks in the week ended May 31, estimates *Ward's Automotive Reports*. That's a drop of 14,001 units from the previous week's output and a decline of 11,476 units from the year-ago output.

In the first four months of 1952, U.S. and Canadian production totaled 1,973,980 autos and trucks, compared with 2,797,651 assemblies produced in the same period last year.

Sales, Output Down . . .

Behind the substantial cutbacks in electric appliance production is the fact that dealers' sales of these items have dropped substantially over the year. In the first quarter, distributors and dealers sold 241,025 electric ranges. That's 128,274 units under dealers' sales in 1951.

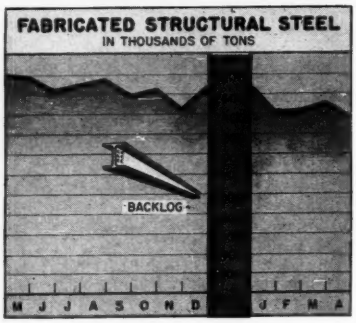
Electric refrigerators in the first quarter this year amounted to 851,375 units, compared with 1,503,476 refrigerators in the first quarter, 1951. Sales of electric water heaters dropped to 127,330 units, compared with 217,664 units



Foundry Equipment Orders

	Index		Value Thousands	
	1952	1951	1952	1951
Jan.	404.5	668.0	$1,862	$3,075
Feb.	200.4	638.6	922	2,940
Mar.	310.0	599.0	1,427	2,758
Apr.	385.1	490.1	1,773	2,256
May	....	431.7	....	1,987
June	....	393.2	....	1,810
July	....	390.3	....	1,797
Aug.	....	404.5	....	1,862
Sept.	....	346.5	....	1,595
Oct.	....	372.4	....	1,714
Nov.	....	305.5	....	1,406
Dec.	....	230.5	....	1,061

Foundry Equipment Mfrs. Assoc.

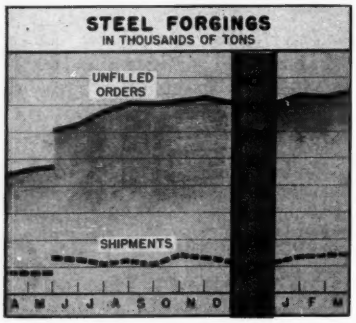


Fabricated Structural Steel

Thousands of Net Tons

	Shipments		Backlogs	
	1952	1951	1952	1951
Jan.	242.7	214.0	2,416	2,404
Feb.	248.4	193.6	2,408	2,590
Mar.	271.1	237.1	2,501	2,602
Apr.	230.9	234.1	2,350	2,808
May	....	234.5	....	2,771
June	....	257.1	....	2,636
July	....	204.4	....	2,688
Aug.	....	236.9	....	2,748
Sept.	....	228.3	....	2,580
Oct.	....	239.0	....	2,641
Nov.	....	218.2	....	2,438
Dec.	....	202.7	....	2,670
Total	....	2,465.8	....	....

American Institute of Steel Construction

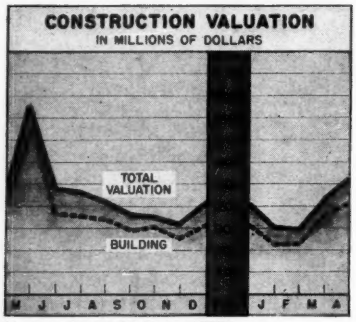


Steel Forgings

Thousands of Net Tons

	Shipments		Backlogs	
	1952	1951	1952	1951
Jan.	271*	138	1,472*	709
Feb.	277*	129	1,464*	781
Mar.	285*	161	1,500*	875
Apr.	...	154	....	924
May	...	266*	....	1,208*
June	...	249*	....	1,264*
July	...	220*	....	1,361*
Aug.	...	240*	....	1,436*
Sept.	...	225*	....	1,419*
Oct.	...	280*	....	1,427*
Nov.	...	256*	....	1,446*
Dec.	...	232*	....	1,411*

U. S. Bureau of the Census. *Data for these months based on reports from commercial and captive forge plants with monthly shipments of 50 tons or more. Previous data based on reports from commercial forge shops producing 3600 tons or more per year.



Construction Valuation

(37 States)—In Millions of Dollars

	Total		Building	
	1952	1951	1952	1951
Jan.	902.1	1,043.2	695.4	881.9
Feb.	885.2	1,140.5	697.8	962.3
Mar.	1,321.2	1,267.4	1,056.0	1,043.8
Apr.	1,597.5	1,375.0	1,243.9	1,108.9
May	.....	2,573.0	.....	2,295.0
June	.....	1,408.9	.....	1,098.4
July	.....	1,379.8	.....	1,084.7
Aug.	.....	1,262.8	.....	1,043.5
Sept.	.....	1,082.9	.....	884.2
Oct.	.....	1,051.4	.....	914.4
Nov.	.....	931.8	.....	771.6
Dec.	.....	1,234.3	.....	939.1
Total	.....	15,751.6	.....	13,027.9

F. W. Dodge Corp.

Charts—Copyright 1951, STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Durable Goods ....May 5	Ironers .....May 12	Ranges, Gas .....Apr. 28
Employ., Metalwkg.Apr. 21	Machine Tools .....June 2	Refrigerators .....Apr. 28
Employ., Steel ....Apr. 28	Malleable Castings..June 2	Steel Castings .....June 2
Freight Cars .....May 26	Prices, Consumer ..May 19	Steel Shipments....Apr. 21
Furnaces, Indus....May 26	Prices, Wholesale ..May 19	Vacuum Cleaners...May 5
Gear Sales .....May 26	Pumps .....May 12	Wages, Metalwkg..May 5
Gray Iron Castings.June 2	Radio, TV .....May 12	Washers .....May 12
Indus. Production..May 26	Ranges, Elec. .....Apr. 28	Water Heaters ....May 19

sold in the first three months of 1951.

Foundry Equipment . . .

As the defense program stretches out and production of civilian durables wanes, orders for foundry equipment are below last year's by substantial amounts. Valuation of orders closed in April reached $1.8 million, some $300,000 over March orders but $483,000 under the year-ago bookings, says Foundry Equipment Manufacturers Association. In April, new orders totaled 385.1 per cent of the 1937-1939 average monthly valuation.

Shipments Rise . . .

Shipments of fabricated structural steel in April continued well above incoming orders. April shipments totaled 230,874 tons compared with bookings that month for 205,022 tons, says American Institute of Steel Construction. Total industry shipments in the first four months of 1952 reached 991,059 tons, compared with contracts closed for 875,358 tons during the same period of 1951. Of the total backlog of 2,350,974 tons, about 46 per cent was scheduled to be fabricated in the four months following April.

Coal Output Lags . . .

Although the bituminous coal industry may be next on the list for an industry strike, towering stocks of industrial bituminous plus the drop in civilian demand are keeping production well below the 1951 rates. National Coal Association estimates that bituminous coal production reached 8,980,000 net tons in the week ended May 24. That's 760,000 tons less than production in the corresponding week in 1951.

Radio Sales Drop . . .

Following the general sales decline in heavy civilian durables, production of radios and television receivers is falling well under last year. Radio-Television Manufacturers Association reports that 847,946 radios were produced in April, compared with 1,337,042 during April, 1951. TV receiver

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	102.5	102.0	103.0
Electric Power Distributed (million kwhr)	7,146	6,810	6,652
Bituminous Coal Output (daily av.—1000 tons)	1,497	1,398	1,623
Petroleum Production (daily av.—1000 bbl)	NA[8]	N.A.	6,169
Construction Volume (ENR—millions)	$307.8	$237.9	$373.7
Automobile, Truck Output (Ward's—units)	103,722	127,723	121,476
TRADE			
Freight Car Loadings (unit—1000 cars)	700[1]	762	745
Business Failures (Dun & Bradstreet, number)	136	145	132
Currency in Circulation (millions)[3]	$28,701	$28,483	$27,461
Dept. Store Sales (changes from year ago)[3]	+4%	0%	+5%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$16,546	$11,959	$17,375
Federal Gross Debt (billions)	$259.6	$259.1	$255.0
Bond Volume, NYSE (millions)	$9.3	$15.6	$10.3
Stocks Sales, NYSE (thousands of shares)	4,098	5,947	4,630
Loans and Investments (billions)[4]	$73.4	$73.2	$69.5
United States Gov't. Obligations Held (billions)[4]	$31.6	$31.4	$30.4
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	171.92	171.92	171.92
STEEL's Nonferrous Metal Price Index[6]	232.4	232.4	241.1
All Commodities[7]	111.9	112.0	115.0
All Commodities Other Than Farm and Foods	113.1	113.0	116.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1946-1949=100. [8]Not available.

set manufacture totaled 322,878 sets in April, compared with 500,000 units in the same month last year.

Sales of TV receiver tubes in April amounted to 26.2 million units, compared with 35.9 million in April, a year ago.

Plumbing Fixtures . . .

Manufacturers' shipments of plumbing fixtures amounted to $58.6 million in the first quarter, the lowest quarterly shipments since the third quarter of 1949, reports the Commerce Department. First-quarter shipments were down 2 per cent from the fourth-quarter shipments of 1951 and 39 per cent from shipments of plumbing fixtures in the first quarter of last year.

Cast iron plumbing fixtures, valued at $26.1 million, comprised 44 per cent of the shipment valuation in the first quarter, 1952.

Generation Climbs . . .

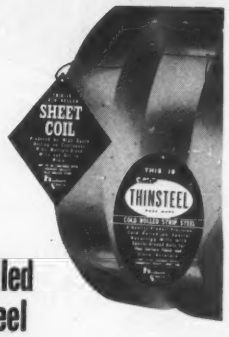
As May came to an end, the seasonal decline in consumption of electricity halted. In the week ended May 31 the industry generated 7.1 billion kwhrs, compared with 7.0 billion produced two weeks previously. Generation in the April-May period was about 7 per cent over the same period in 1951.

Failures Plunge . . .

For the third consecutive week the number of business failures declined steadily, according to Dun & Bradstreet Inc. In the week ended May 29, commercial and industrial casualties dipped to 136. That's the lowest number of casualties since the week ended Feb. 14.

Trends Fore and Aft . . .

About one out of every six dollars of personal income in 1951 came from government funds. . . Consumer prices rose 1 per cent from March to April. . . Motor vehicle registrations increased 5.6 per cent in 1951. . . "I believe we can rely on the increased strength the government has built into our economy during the last 20 years to see us through the perils that lie ahead."—Labor Secretary Tobin. . . Stocks of crude petroleum in the U.S. totaled 281 million barrels in the week ended May 17. . . Department store sales rose 4 per cent above the same week last year in the week ended May 31. . . Gas utility industry added 1.5 million home heating customers in the 1951-1952 winter months.



which cold-rolled strip steel costs less "in the end"

- if variations in physical characteristics are permissible
- if fairly heavy oversize gauge variations are not objectionable
- if the fabricating operations are not too complicated and do not require intricate, expensive dies
- if a fine surface finish is not essential
- if a good base for paint or enamel is desired
- if you do not object to some "square footage" loss due to oversize variation
- *then Sheet Coil will probably be the most economical material for the job • • •*

• • • on the other hand—

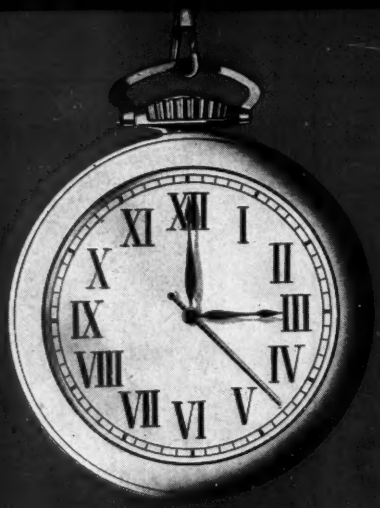
- if you must have a high degree of uniformity of chemistry and physical properties—and precision gauge tolerances
- if you wish to avoid rapid die wear due to heavy oversize gauge variations
- if you require a fine finish or a better base for plating
- if you want maximum "square footage" for greatest parts yield per ton
- if you want selected tempers for maximum strength and lightest weight
- *then you'll find C. M P. THINSTEEL far and away the most economical material.*

To be sure of getting the right steel, order "sheet coil" or "THINSTEEL" and be sure each coil carries an identifying tag If we can help you select the right grade, just call on us.

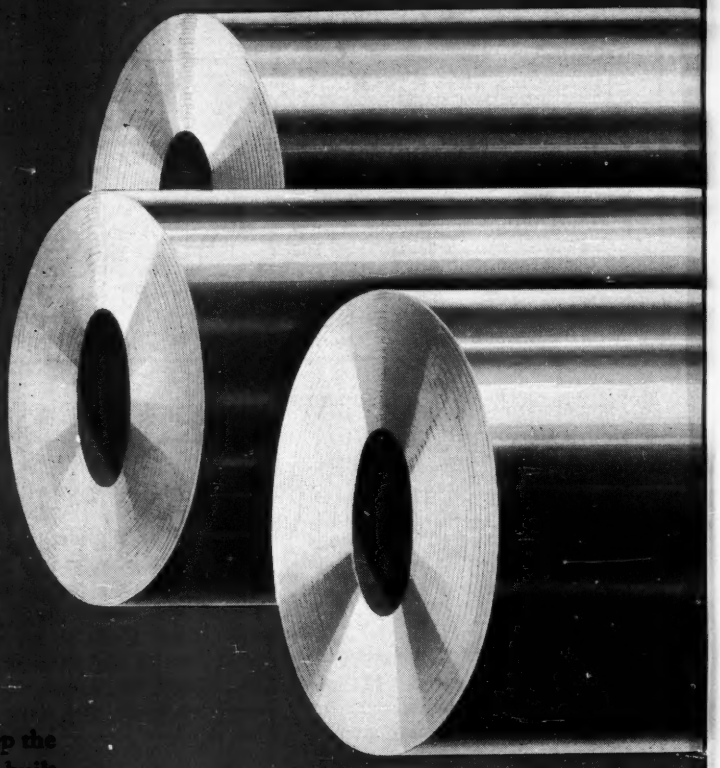
THE Kenilworth Steel co.
750 BOULEVARD
KENILWORTH, N. J.

SPECIALISTS IN FLAT ROLLED METAL PRODUCTS

Telephones: N Y. COrtlandt 7-2427
N. J. UNionville 2-6900
Teletype· Roselle, N J. 387



by the hour...



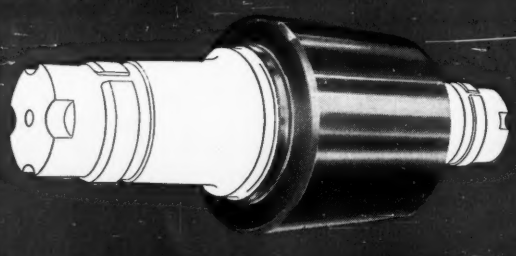
and by the ton

Heppenstall back-up roll Sleeves make good production sense

Heppenstall Sleeves for Back-Up Rolls keep the mill line running longer because they're built to last. They mean less down-time—increased productivity—lower overall costs. Their records of performance make good production sense. They show increases in productivity of from 61% to 128% in terms of roll service, which are typical of the benefits in time and cost savings—increases in production.

And, there's plenty of "reason why" Heppenstall Sleeves provide this exceptional service. Each sleeve is forged from Heppenstall's own alloy steel and "custom-built" . . . normalized, annealed, heat treated, and tempered to exact specifications. The results: correct hardness . . . maximum density . . . perfect fit . . . durable surfaces . . . resistance to cracking and spalling in high speed service.

For complete information and technical assistance, call Heppenstall Company, Pittsburgh 1, Pa. Sales offices in principal cities.



Heppenstall

—the most dependable name in forgings

Men of Industry

C. W. VERRIER
. . . Ainsworth Mfg. production supt.

GEORGE P. LACY
. . . heads wire div. sales at Sheffield

DAN REEBEL
. . . joins Kennametal Inc.

C. W. Verrier was appointed production superintendent and **Robert Hanna** as manufacturing engineering superintendent by **Ainsworth Mfg. Corp.**, Detroit. Mr. Verrier recently joined Ainsworth after four years with Square D Electric Co. where he was in charge of stamping operations. Mr. Hanna formerly was with Murray Corp. of America as manager, engineering and mechanical division.

National Malleable & Steel Castings Co. appointed **Robert D. Sowers** sales manager of the industrial division at Sharon Works, Sharon, Pa. He succeeds the late **Paul E. Tamplin.**

Anthony Di Nardo was appointed manager of sales promotion and sales engineering of **Crucible Steel Co. of America's** Rexweld hard surfacing products and allied lines. His office will be at Harrison, N. J.

Lloyd R. Earl was named president, **United Concrete Pipe Corp.**, Baldwin Park, Calif., subsidiary of U. S. Pipe & Foundry Co. He formerly was vice president, Consolidated Western Steel Corp.

Reese F. Clifford, manager of the Kearney, N. J., works, **Western Electric Co.,** was named head of the Hawthorne works in Chicago to succeed **David Levinger,** who retires Aug. 27. Mr. Clifford also was elected a vice president of the company, as was **Arthur B. Goetz** who will succeed Mr. Clifford at the Kearney works.

George P. Lacy was appointed manager of sales, wire division, **Sheffield Steel Corp.,** to succeed **R. V. Isham,** who, due to ill health, took the title of consultant to manager of sales, wire division. Mr. Lacy will have offices in Kansas City, Mo. He continues to serve as manager, railroad sales. **A. L. Bard** becomes manager, grinding media sales, to succeed Mr. Lacy.

Gilbert G. Thorne was elected president of **Motorola Inc.,** Chicago. He has been with Sherwin-Williams Co., Cleveland, for a number of years.

Dr. Frank H. Driggs was elected president of **Fansteel Metallurgical Corp.,** North Chicago, Ill., and its subsidiary, Weiger Weed & Co. **Robert J. Aitchison,** former president, was elected chairman of the corporation and its subsidiary, Vascoloy-Ramet Corp. Dr. Driggs became vice president in charge of technical development in 1938 and executive vice president in 1952. He is succeeded by **Dr. R. Winchester,** who assumes the title of director of technical division.

Shenango Furnace Co., Pittsburgh, appointed **Benton W. Norton** general superintendent of its blast furnaces, and of the ingot mold foundries of its subsidiary, Shenango-Penn Mold Co. He succeeds the late **W. K. Menke.** Mr. Norton will have headquarters at Sharpsville, Pa.

Dan Reebel, Pittsburgh editor of STEEL and other Penton Publishing Co. publications, has joined **Kennametal Inc.,** Latrobe, Pa., as manager of advertising and public relations. His office will be at 600 Grant St., Pittsburgh. **Fred Pennington** continues as advertising manager, industrial tools division, and **R. L. Farris** as advertising manager, mining division. Mr. Reebel came to STEEL as associate editor in 1947 from Mesta Machine Co. where for 10 years he was advertising manager. Previous to that he was with Youngstown Sheet & Tube Co. as metallographist.

Link-Belt Co. appointed **James H. Oakes** sales manager for the Philadelphia plant and **Byron K. Hartman** sales manager for the new Colmar plant, which will begin manufacturing operations later this year in Colmar, Pa.

Rapids-Standard Co. Inc., Grand Rapids, Mich., named **Kenneth P. Denisty** product manager of its caster and truck division and **Bert Woldring** as researcher in product and market development.

Donald K. Davis was named sales manager, special products division, **Interstate Drop Forge Co.,** Milwaukee.

F. H. Allison Jr. was named assistant vice president of **Blaw-Knox Co.,** Pittsburgh, in charge of metallurgy and roll sales, a new

post within the company. He will also have responsibility for the metallurgy in the company's Pittsburgh foundries.

Allied Products Corp., Detroit,

FRANK H. BISHOP
. . . new president, Allied Products

elected **Frank H. Bishop** president and a director. He succeeds **Ralph Hubbart** who was advanced to chairman of the board. Mr. Bishop has been executive vice president.

Theodore H. Booth was appointed director of manufacturing, **Carborundum Co.**, Niagara Falls, N. Y., succeeding **P. H. Walker**, promoted to assistant vice president.

F. W. Boye III was elected board chairman and **Gilbert J. Rutenschroer** as president and general manager, **Boye & Emmes Machine Tool Co.**, Cincinnati.

Torbett Crocker, formerly with Lobdell United Co., has joined the staff of **Rees Machinery Co.**, Pittsburgh.

Chester L. Shaw was appointed works manager, **Detroit Broach Co.**, Detroit. He has been with Ross Gear & Tool Co.

Lester Long was elected vice president of sales, **American Cast Iron Pipe Co.**, Birmingham. He succeeds **J. J. Swensen**, retired after 45 years with the company.

Oliver Corp., Chicago, appointed **D. W. Koegle** assistant to the general sales manager to succeed **S. T. Barker**, retired. **R. D. Merrill Jr.** was named manager, service parts division, to succeed **George X. Beaudway**, retired, and is succeeded as assistant branch manager at Dallas by **O. Glenn Satterlee. Albert B. Roberts**, sales manager of the St. Louis branch, is now assistant manager of the company's operations in Memphis, Tenn., succeeding **Richard S. Shamel**, named industrial district manager in Kansas City.

Paul Vinson was named director of engineering and research for **Sheldrick Mfg. Co.**, Upper Sandusky, O. **Bernard E. Logsdon** becomes assistant chief engineer. Mr. Vinson has been chief design engineer for Ford Motor Co., Monroe, Mich., plant.

David S. Zahniser was appointed general sales manager, **Levinson Steel Sales Co.**, Pittsburgh.

Douglas O. Yoder will be president of **Yoder Co.**, Cleveland, effective July 1. He has been assistant to

DOUGLAS O. YODER
. . . elected president, Yoder Co.

the president, a position to which he was elected in 1949.

Andrew E. Reiss was appointed chief engineer, **Morrison Steel Products Inc.**, Buffalo.

R. D. King, procurement department manager, was appointed a departmental vice president of **Koppers Co. Inc.**, Pittsburgh.

Perfection Stove Co., Cleveland, elected **P. T. Skove** secretary-treasurer, effective July 1. He succeeds **George McCuskey**, resigned to take a position with Youngstown Sheet & Tube Co. Mr. Skove is replaced as purchasing agent by **W. H. Mansfield.**

A. M. Wickwire resigned as president of **Automatic Steel Products Inc.**, Canton, O. He continues as a director and in an advisory capacity. **Curtis Franklin**, chairman, takes over the president's responsibilities until a new head is named.

Frank B. Powers was elected vice president of manufacturing, **P. R. Mallory & Co. Inc.**, Indianapolis. He had been vice president of operations and a director of Federal Telephone & Radio Corp.

Kenneth R. Herman, vice president and general manager and a director of Vickers Inc., was also elected vice president of **Sperry Corp.**, New York, parent company.

John H. Biggs, formerly representative of **Brown & Sharpe Mfg. Co.** in Philadelphia, was appointed a representative of Brown & Sharpe of New York Inc. He succeeds **J. H. Skelton**, retired, and assumes charge of the New York office. He is succeeded at Philadelphia by **John J. McAleese.**

K. A. Krieger was appointed sales manager, tank-trailer division, Fruehauf Trailer Co., at Detroit.

Fred L. Etchen was appointed materials handling sales engineeer at Detroit by **Pittsburgh Steel Products Co.**

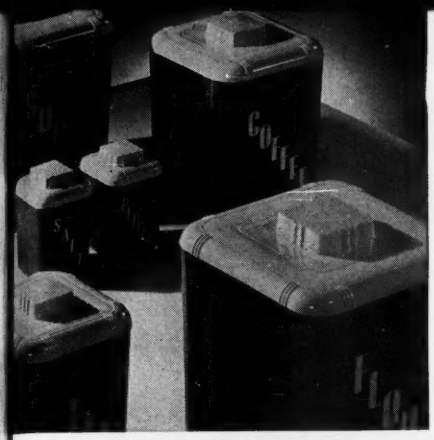
Fred E. Orr, production supervisor at the Buffalo plant, **American Brass Co.**, retired.

To co-ordinate all purchasing activities, **Rust Engineering Co.**,

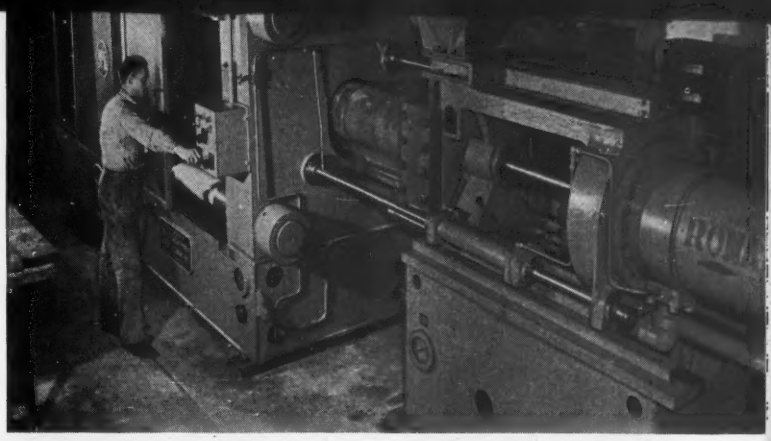
ARTHUR M. OVER
. . . directs Rust Eng. purchases

Pittsburgh, named **Arthur M. Over** director of purchases. **A. M. Duncan** continues as purchasing agent.

Thomas C. Ballou was appointed New York district sales manager, **American Car & Foundry Co.**, in



NO MORE PROBLEMS. The production of plastic household items by Rona Plastic Corporation was slowed down by an inadequate hydraulic oil. A switch to Sunvis 999, over a year ago, restored it to normal.



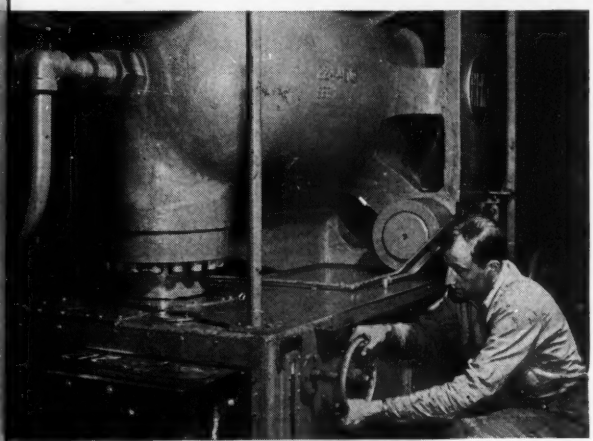
PRESSURE LOSSES ENDED. There are few plastic molding machines as big as this 60 ounce model. It exerts a pressure of 1,000 tons. Because the hydraulic oil formerly used sludged up and thinned out, it could not maintain this pressure. But Sunvis 999 has fully met these severe requirements, as well as those of Rona's nine other hydraulic machines of varying sizes.

PLASTIC MOLDER'S BOTTLENECK ENDED BY SUNVIS HYDRAULIC OIL

More than a year ago Rona Plastic Corporation, New York City, had trouble with its hydraulic molding machines. The machines functioned erratically due to oil sludge sticking the control mechanisms. In addition, the oil thinned out excessively at normal operating temperatures, and resulted in the loss of proper clamping pressures on the dies. To keep the machines going at all, it was necessary to drain, clean, and entirely recharge the systems at frequent intervals.

A Sun representative, called in by Rona, studied the problem and recommended Sunvis 999. He knew it would put an end to pressure losses, because, even at elevated temperatures, it does not decrease in viscosity as much as most other oils. He also knew its exceptional stability would end the sludging problem.

Sunvis 999 proved to be the answer to all Rona's hydraulic oil problems. The original charges, with minimum make-up, are still giving good service. Rona can expect the same performance for a long time to come, because experience shows that under normal operating conditions, Sunvis 900 Series Oils are *good for the life of the equipment.*



NO OIL CHANGES HAVE BEEN NEEDED. Before Sunvis 999 was adopted, the oil in each of the machines had to be changed frequently (the one pictured holds 450 gallons). The original charges of Sunvis 999 have been in use now for more than a year.

Department S-6
Sun Oil Company, Philadelphia 3, Pa.

I am interested in knowing more about Sun Hydraulic Oils. ☐ I would like to consult with a Sun representative. ☐ Send the booklet "Hydraulic Fundamentals and Industrial Hydraulic Oils."

Name_____

Title_____

Company_____

Address_____

City_____ Zone____ State_____

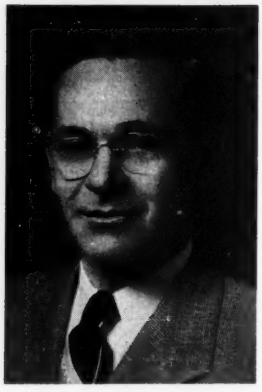
TECHNICAL ASSISTANCE AVAILABLE. Sun's engineers are at your service for consultation on all hydraulic oil applications. It will pay you to utilize the experience they have gained in solving a wide variety of problems in many different industries.

SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL

SUNOCO

WILLIAM J. MAIR
. . . elected a V. P. at IBM



G. W. KELLY
. . . heads purchasing at Kaiser Steel

ROBERT F. BOURNE
. . . gen. sales mgr., Claymont Steel

charge of railroad car and miscellaneous sales in New York, New Jersey, New England and eastern Canada.

William J. Mair was elected a vice president, **International Business Machines Corp.** He continues as general manager of the plant at Poughkeepsie, N. Y.

At the **Hanson-Whitney Division,** Whitney Chain Co., Hartford, Conn., **B. Walter Swanson** was made factory manager and **E. P. Cody** office manager in addition to his duties as general sales manager.

New quarters for **Harvey Aluminum,** a division of Harvey Machine Co. Inc., were opened in Chicago, and **Art Lakin** was appointed managing sales engineer of this branch.

Dr. Gilbert E. Doan, head of Lehigh University's Department of Metallurgy since 1939, will join the research department of **Koppers Co. Inc.** on Aug. 1 as manager of its metallurgical branch.

G. W. Kelly was promoted to general purchasing agent, **Kaiser Steel Corp.,** Oakland, Calif., in charge of all purchasing for the company's mines, mills and offices. He is succeeded at Oakland as purchasing agent by **R. L. Lamborn,** formerly scrap procurement manager at Los Angeles, and **W. F. Bowles** becomes assistant purchasing agent. **H. R. Bohme** was made assistant to the purchasing agent at the Fontana, Calif., mill.

Harold J. Smith was appointed Chicago district manager, **National Acme Co.,** to succeed the late **R. J. Preston.**

Charles A. Carlson Jr. was appointed assistant district manager of sales of the New York sales area of **Lukens Steel Co.,** with headquarters in Albany.

William E. Kennedy Jr., formerly with Sharon Steel Products Co., is now representative for Ohio, western Pennsylvania and western New York of **Young Steel Products Co.,** Youngstown.

Robert F. Bourne was appointed general sales manager, **Claymont Steel Corp.,** Claymont, Del., subsidiary of Colorado Fuel & Iron Corp. He succeeds **Richard M. Worth,** resigned to enter his own private enterprise.

Arthur V. DeYot was named plant manager at the Middletown, Pa., steel boiler fabricating plant, **National Radiator Co.**

W. A. Robinson was appointed assistant chief engineer, contracting division, **Dravo Corp.,** Pittsburgh.

D. O. Woods was named superintendent of technical departments, **Lockheed Aircraft Service,** Burbank, Calif., subsidiary, Lockheed Aircraft Corp.

Matt W. Stanley was appointed an assistant treasurer, **Aluminum Co. of America,** Pittsburgh.

John E. Carroll was elected a director of **American Hoist & Derrick Co.,** St. Paul. He is vice president of sales.

OBITUARIES...

Jessel S. Whyte, 61, president and general manager, **Macwhyte Co.,** Kenosha, Wis., died May 28 following a long illness.

Albert H. Thomas, 81, chairman of **Buckeye Steel Castings Co.,** Columbus, O., and president from 1936 to 1945, died May 29. He also was president of the board of Battelle Memorial Institute.

Christopher D. Smithers, 87, a director of **International Business Machines Corp.,** New York, and senior partner until his retirement in 1921, died May 27.

Julius H. Collin, manufacturers' representative for **Benjamin Harris Co.,** Chicago Hts., Ill., died May 22.

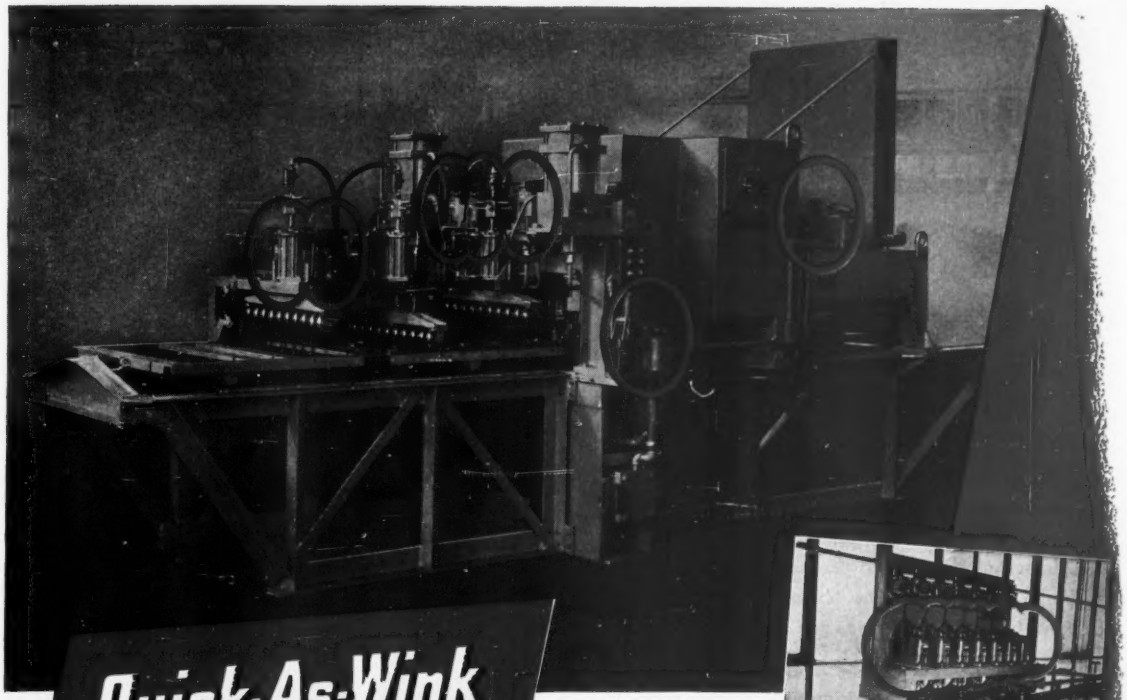
George Hodge, 62, who retired in 1948 as assistant to the vice president in charge of industrial relations, **International Harvester Co.,** Chicago, died May 26.

George H. Rose, 73, retired executive of **American Steel & Wire Co.,** Cleveland, subsidiary, U. S. Steel Corp., died May 29.

James C. Daley, chairman of the board of **Jefferson Electric Co.,** Bellwood, Ill., died May 15.

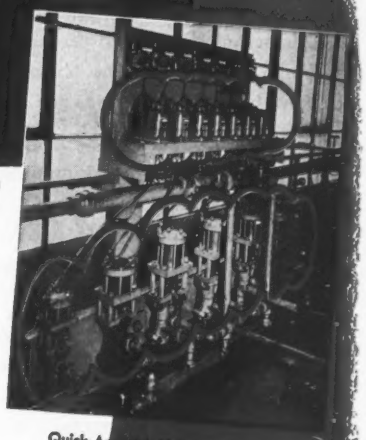
Claude Mengel, 66, general manager, **Horace T. Potts & Co.,** Philadelphia, died May 24 following a brief illness. He had been with the company more than 30 years.

Charles K. King, 84, chairman, **Ohio Brass Co.,** Mansfield, O., died May 30.

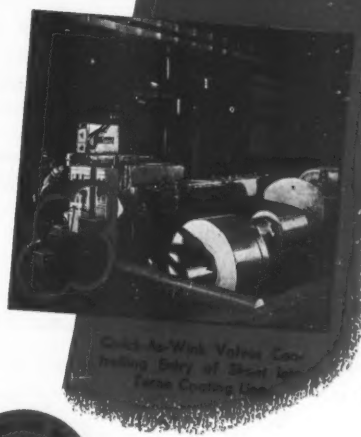


Quick-As-Wink Control Valves

Quick-As-Wink Air Valves on Multiple Welding Machine.



Quick-As-Wink Valves for Hydraulic Welding Machine.



Quick-As-Wink Valves Controlling Entry of Sheet Into Forge Coating Line.

synchronize and coordinate related machine operations

Those successive and inter-related machine operations — that speed manufacture and cut costs — can only be as successful as the air and hydraulic control valves you use. Specify Quick-As-Wink Control Valves. Positive and fast acting, Quick-As-Wink Valves are designed and built to meet the most exacting requirements. Danger of "repeating", major cause of breakdowns and accidents, is practically eliminated. They will deliver dependable and precision performance month after month, and year after year. Foremen and superintendents know there's nothing better than Quick-As-Wink Control Valves. Can *you* afford to gamble with less?

Quick-As-Wink

AIR AND HYDRAULIC

Control Valves

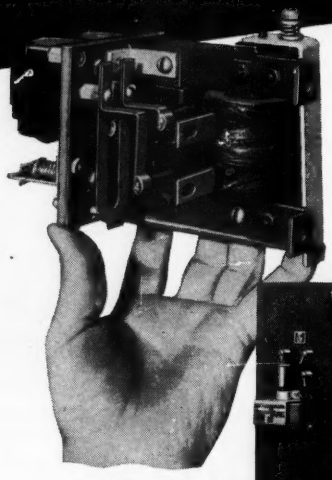
Hand, Foot, Cam, Diaphragm and Solenoid Operated

Mfd. by C. B. HUNT & SON, INC., 1911 East Pershing St., Salem, Ohio

NON-STOP OPERATION SAFEGUARDED

by EC&M THERMAL-MAGNETIC OVERLOAD RELAYS

set at 90% to 110% full load current



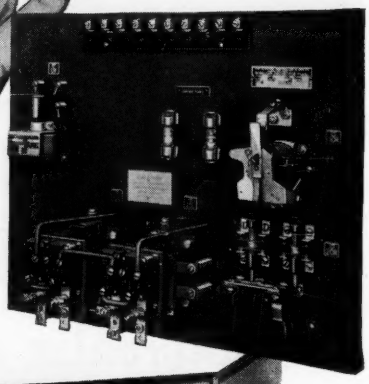
¾ rear view shows independent thermal and magnetic tripping elements — both are adjustable. Relay is front-connected, removable as a unit from the mounting-base.

In a certain chemical processing cycle motor-drives operate up to six months without stopping. Continuous operation is essential until the product is completely processed and the machines cleared. Ambient temperatures are high.

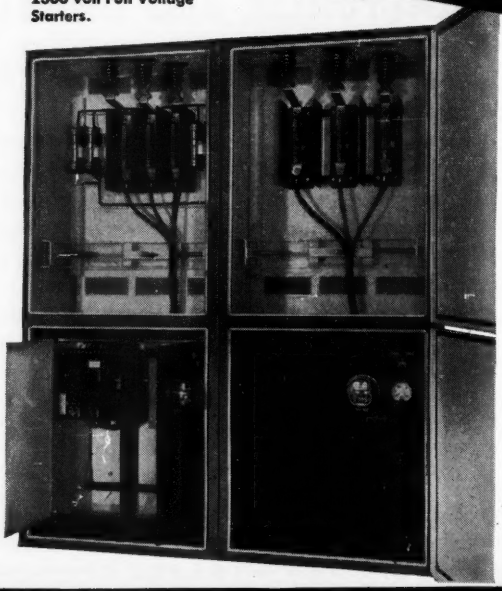
To safeguard the insulation of these motors—by keeping temperature rise within safe limits—EC&M 2300 volt Motor Starters with EC&M NEW Type ZTM THERMAL-MAGNETIC Overload Relays were chosen.

These new Relays couple motor current directly to thermal action through a transformer for quick, positive response. Depending upon the motor load and ambient temperature, the thermal element of these Relays is adjusted from 90 to 110% Full Load Motor Current. Thermal reset time is short. Magnetic instantaneous operation minimizes damage under fault current conditions.

For improved motor protection, investigate EC&M THERMAL-MAGNETIC Overload Relays.



Type ZTM Overload Relay Panel with Time-Delay Under Voltage Protection feature is mounted in the lower compartment of EC&M 2300 volt Full Voltage Starters.



Write for your copy of Bulletin 1180-322

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Production AND Engineering
NEWS AT A GLANCE

FAST LOOK INSIDE—High speed cameras are giving automotive engineers the inside story on engine performance. The split-second explosions that drive the engine are too fast, too bright for the human eye. With special photographic techniques research engineers are able to break down perplexing mysteries of combustion which have an important bearing upon engine design and fuel chemistry. Transparent quartz cylinder heads that permit the camera to "see" inside turn the trick. Operating at terrific speed the special camera produces film strips showing in detail each complete flame cycle. From these, engine performances under varying conditions are studied.

BIG POLISHING JOB—Coated abrasive belts are in for a long stretch of work. But they may ease the job for companies polishing and grinding jet engine blades on a production basis. Present turbojet engines may contain as many as 2500 jet blades and buckets, both movable and fixed. When the industry is completely tooled up, jet engine production is expected to reach 18,000 engines per month. Regardless of the method of manufacture, the finishing job will fall to a variety of machines using abrasive belts. p. 90

HARD AS CHROMIUM—An attractive alternative for nickel a new tin-nickel electroplate developed by Tin Research Institute, Middlesex, England, is reported to be satisfactory for a wide range of domestic metal ware, auto parts and electrical appliances. The coating consists of two parts tin, one part nickel. It provides a beautiful metallic luster with a faint rose-pink color, is hard and as untarnishable as chromium, and can be deposited bright in one operation. Tin research says several commercial installations using the plating process already are in operation, one of these in America.

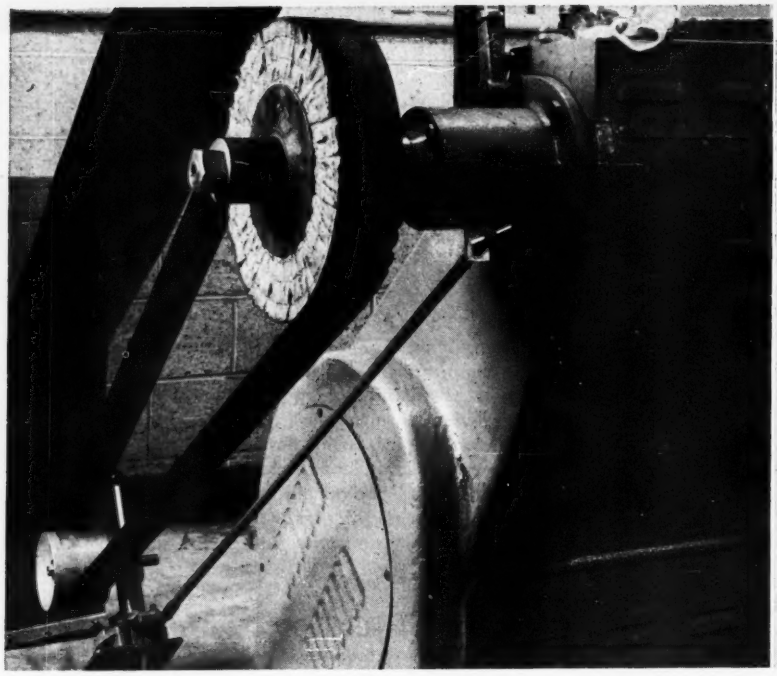
SPALLING VS DISINTEGRATION—Spalling is blamed for many refractory failures, but many of these failures are really due to carbon monoxide disintegration, says Laclede-Christy. Does presence of carbon itself in a furnace disintegrate a refractory? The firm says no. Real culprit is carbon monoxide gas. Here's how it does it. Being a gas, the carbon monoxide enters the refractory pores. If iron oxide in ferric form is present, it acts as a catalyst causing carbon monoxide to break up, and deposits of carbon to gather around the iron spot. Continued exposure of the particle to the furnace atmosphere, which has carbon monoxide present, permits layer upon layer of carbon to surround the particle. Eventually the "snow balling" growth sets up an internal strain great enough to crack the brick. The action, however, does not take place at all temperatures. It is most pronounced between 700 and 1200°F; and when the concentration of carbon monoxide is just right.

NEW PLATING METHOD—Practical process for electrodepositing aluminum at room temperature produces dense, ductile deposits of the metal from a new type of organic plating bath consisting of an ether solution of aluminum chloride and a metal hydride. The new bath, developed at National Bureau of Standards, is expected to find important application for electroforming articles with close inside tolerances, and for providing various equipment with a thin protective coating of aluminum. p. 94

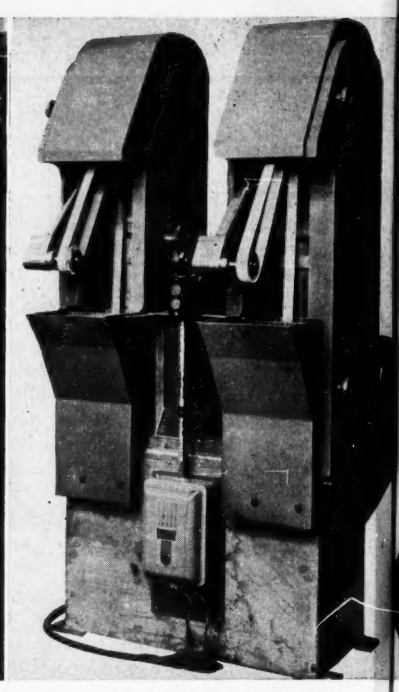
LOOKING FOR MICROSECOND TIMING?—If you have a microsecond timing problem in connection with relay contacts, the latest counter-chronograph developed by Potter Instrument Co. Inc., Great Neck, N. Y., may fill the bill. It measures elapsed time in steps of 0.000000125 second, and exhibits the results on readout lamps in discrete numbers, whole decimals from a microsecond up, in fractions down to one-eighth microsecond. For intervals longer than one second, the electronic "stopwatch" recycles and an external mechanical register may be used to extend the count. It can be used for many applications—determining projectile velocity, frequency measurements in telemetering, gas tube and geophysical measurements and timing of camera shutters.

UP IN A HURRY—Are you cramped for space? Are you looking for ways to cut handling costs? Here's a method that fits into nearly every plant—to provide additional racks, hangers, bins or work benches. It stems from a new steel framing material developed by Ainsworth Mfg. Co. Consisting of only three components, the framing can be adapted to almost any need with the use of only two tools—a hack saw and hand wrench. p. 104

AIR FORCE GOES NAUTICAL—"Six-hundred miles per hour" as a measurement of speed for Air Force planes goes out the window on July 1—after that date they'll make only 528 knots, even though they fly no slower. And as the terminology is modified so will be hundreds of air speed indicators until stocks of the units calibrated in mph are depleted. Changeover in terminology was approved by the Air Co-ordinating Committee to help eliminate confusion in traffic control. Heretofore mph was used over land and knots over water. A nautical mile is equal to one minute of arc on a great circle route around the world.



Standard lathe fitted with backstand for coated abrasive belt and a large diameter soft contact wheel for the free-hand finishing of convex blade shapes



Duplex version of a machine made by Production Machine Co. for free-hand polishing, grinding of blades and buckets. The unit can also be used on fillet areas

Coated Abrasives Ease Jet Blade Finishing Problems

Production polishing, grinding of jet engine blades and buckets is an accomplished fact with many new machines employing coated abrasive belts

By J. KARL McLAUGHLIN
Product Engineer
Behr-Manning Corp.
Troy, N. Y.

ALL-OUT jet engine production is staggering to contemplate, especially to producers of jet engine blades and buckets. Present turbojet engines may contain as many as 2500 jet blades and jet buckets, both movable and fixed. When the industry is completely tooled up, jet engine production is expected to reach 18,000 engines per month. Blades for these engines will be one of the industry's biggest headaches.

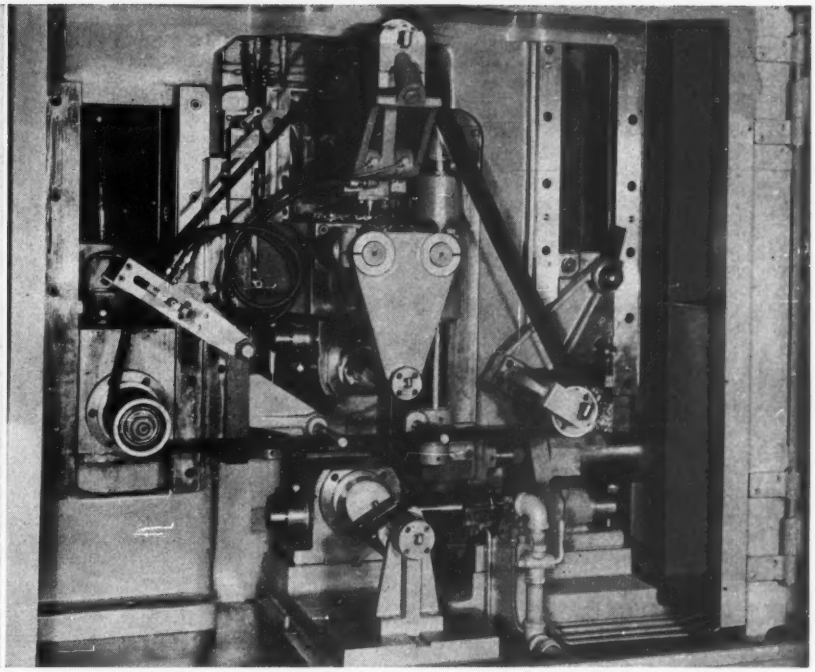
While small production runs for experimental engines can be machined from bar stock and finished by hand, method is costly and time-consuming. It is prohibitive to manufacturers who contemplate production of 50,000 jet blades per day. Adding to the problem is variety of blades and buckets required, many engines having 13 or more basic shapes which must be accurately shaped and have a surface finish of 16 microinches or less.

Many Blades, Many Methods—Among manufacturers producing blades, no two are using the same method. Such a condition may exist in different plants of the same company. There is little unanimity of thought about the best way to produce blades and buckets, and it seems that engineers are still looking for a better method. Besides four basic methods now being used, experimental methods are being worked on that may show promise.

Experimental blades are being made from sheet stock and folded along one edge. Blade is fastened to a short base section which provides attachment for the blade and also the attaching foot. One manufacturer is working on a method of extruding blades using the Sejournet process: Stainless steel mass encased in a glass envelop is squeezed through a plate die to give desired blade shape. Twist is put in the blade while the extrusion is still hot.

Three Basic Methods—Greatest volume of blades today are precision forged and coin pressed. Forgings and forging dies must be kept clean. Many manufacturers grind and pickle blade surface then

Contact wheels as small as ⅝-inch diameter back up the abrasive belt on free-hand machine that is manufactured by Vonnegut Corp. It will do fillet areas



Upper fixture on this grinding machine, developed by Sundstrand Co., contains a cam which presses the abrasive belt against the jet bucket to perform the operation

do a rough contour machining job in the fillet area before final coin pressing. Some are considering rough casting the jet blade followed by forging to the desired shape.

Second method being used is rough forging the blade followed by machining of the entire blade areas. This produces an accurate blade shape, but is a costly machining operation. Certain alloys work harden rapidly, which increases tool cost. Machine tool marks must be removed after machining.

Several producers employ precision casting processes adapted to production line methods. Extensive use is made of precision castings for stationary blades and nozzle diaphragms. Casting permits use of hollow sections necessary for aircraft use.

Cleaning 'Em Up—Regardless of method of manufacture, cleaning and spotting work must be done on all jet blades and buckets. Die marks, wrinkles, casting defects, blow holes must be removed. Precision forged blades do not always come within their tolerances and one or both faces must be ground. Blades from solid bar stock or rough forgings must have proper shape ground into the metal.

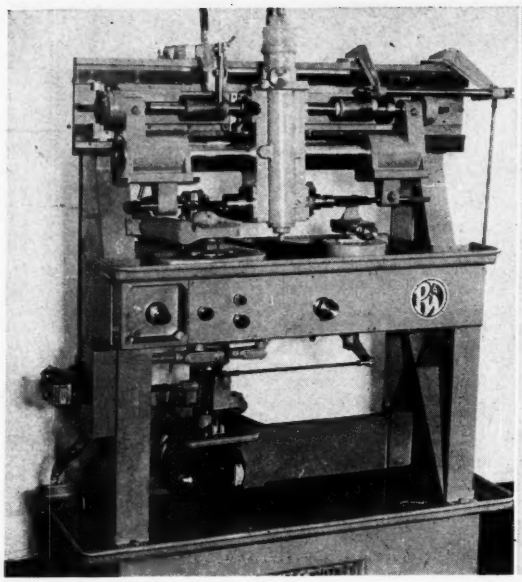
While methods of producing belts differ, for finishing, coated abrasive belts are used almost exclusively. A variety of machines have been developed that use these metallic cloth, coated abrasive belts. All take advantage of the fact that a coated abrasive belt's flexibility permits grinding or polishing of contoured surfaces. Length of the belt dissipates heat generated by the abrasive action, eliminating possibility of burning the blade.

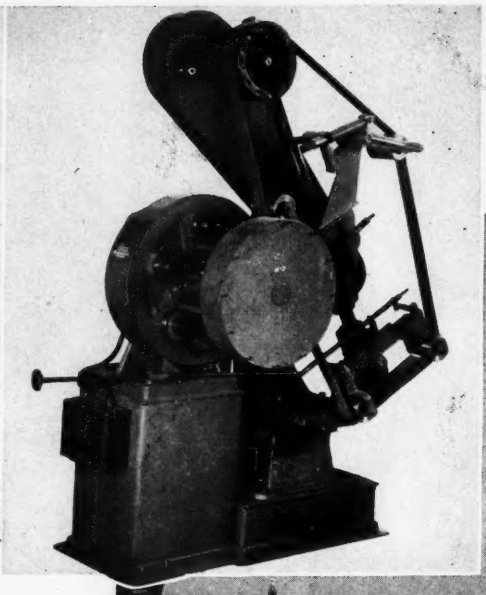
Longitudinal Polishing—Fastest method of doing the major blade and bucket areas is longitudinal polishing. This type of finishing is specified by some jet engine manufacturers as it removes all cross blade scratches which may be the starting point for fatigue cracks.

Essentially, all machines use formed rubber pieces which press a section of the coated abrasive cloth belt against the blade or bucket which is longitudinally oscillated between the pads. Finishes in the order of 10 to 12 microinches are easily obtained on production operations. A single unskilled operator can turn out 350 to 700 blades an hour.

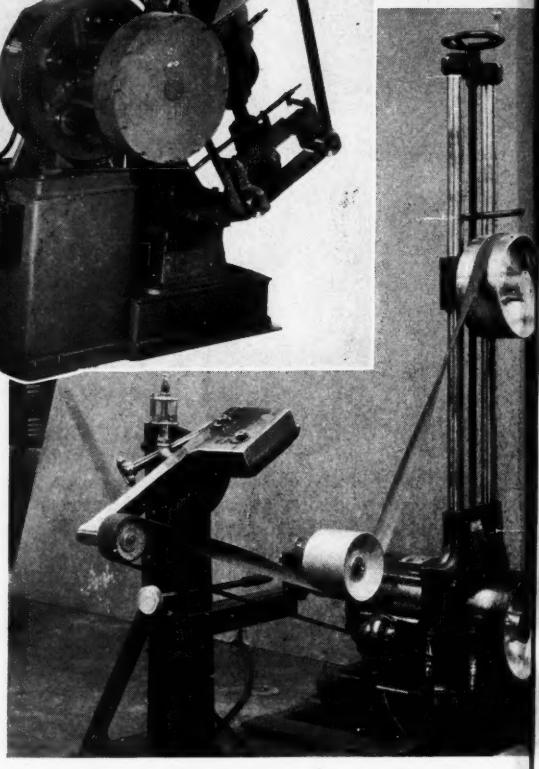
Various machine builders have produced machines specifically for longitudinal blade polishing. Among these is a five-station machine produced by Hammond Machinery Builders, Kalamazoo, Mich. Machine moves blades through formed rubber pads that back up a metalite coated abrasive cloth belt. Table of machine carries reciprocating mechanism for blades and processes them through a series of grits contained in the stationary polishing heads. Single operator produces 550 blades per hour.

Murray-Way Corp., Detroit, has a six station machine in which the blade remains stationary while polishing head, contact pads and abrasive move back and forth rapidly to do the polishing. Hourly output can be as high as 800 blades per hour with a single operator. Company has also produced a machine which processes blades with curved leading edges found in the initial air compression stages of several jet engines. Blade is positioned in a holder which rotates





Above—Abrasive belt machine of Pratt & Whitney generates desired blade or bucket shape from a master blade. Also forms radius on the leading and trailing edges of the blade



Above, right—Automatic machine produced by Acme Mfg. Co. carries the blade in a rotating fixture past an abrasive belt

Stephen Bader Co. grinder and polisher keeps same belt speed regardless of contact wheel size. Unit also polishes fillet areas

in synchronization with a formed cam against an abrasive belt.

Acme Mfg. Corp., Detroit, has developed a seven-station machine. Blades are held in a vertical position and longitudinally moved between a pair of formed rubber pads which press the abrasive against the blade to polish it. Company also makes a machine for producing radius on leading and trailing edges of blades and buckets.

Blade, Bucket Correction—For overall correction or finishing of convex or concave areas of blade and bucket, Sundstrand Co., Rockford, Ill., has developed a grinding machine. Bucket is placed on lower fixture. Upper fixture contains a cam which presses abrasive belt against the bucket.

Machine developed by Ryman Engineering Co., Ellwood City, Pa., utilizes a platen covering one side of the blade at a time, which presses down upon the blade to give the desired contour. A second belt and matching platen for the opposite side of the blade may be used without repositioning the blade in its holder. Company also produces machine for applying radius to leading and trailing edges of blades and buckets. Blade is rotated in a holder against an abrasive belt operated over a contact wheel. Wheel backs up belt at point where radius is ground.

Production Machine Co., Greenfield, Mass., has a machine available as either a duplex or single unit. One to three-inch contact wheels are used to free-hand grind and polish defects. A long coated abrasive belt revolves on a contact spindle.

Machine produced by Vonnegut Corp., Indianapolis, employs contact wheels as small as $\frac{5}{8}$-inch for free-hand removal of defects. Air tensioning is used with a 168-inch belt. Precision spindle permits speeds up to 30,000 rpm.

Abrasive belt machine developed by Pratt & Whitney Division, W. Hartford, Conn. generates the desired blade or bucket shape from a master blade. Machine is entirely cam controlled. This machine also forms the desired radius on the leading and trailing edges.

Excello Corp., Detroit, reports a series of units which machines a rough forging all over, then removes tool marks and polishes progressively on a coated abrasive belt machine. Operation is entirely cam controlled.

For offhand grinding of blades and buckets Stephen Bader Co., Rockville Center, Long Island, N. Y., offers a grinding and polishing machine shown above. Machine can be used with contact wheels varying from 2 to 14 inches with no change in belt speed. Machine adjusts for operation from a standing or sitting position.

Fillet Grinding, Polishing—Area between the foot and upright sec-

Wheel's small diameter allows abrasive belt to conform to concave air foil section in polishing blade surface

Polishing convex surface and critical fillet area of a jet blade. Belt extends over edge of wheel slightly

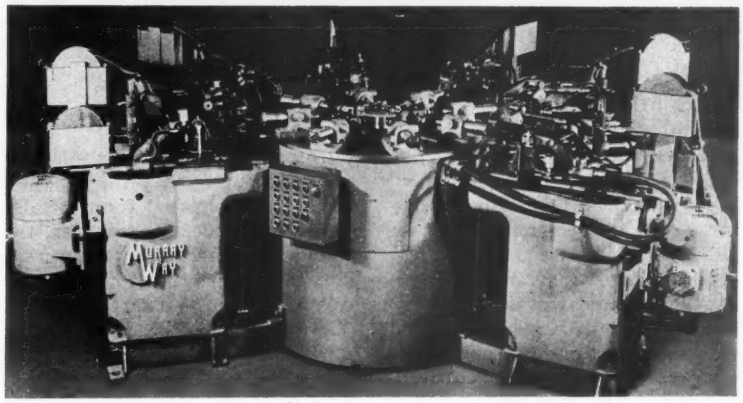
tion of a blade or bucket is called the fillet area. It is the cause of a large percentage of rejects in production. Many manufacturers machine the foot as a unit and the blade or bucket area separately. Fillet area must then blend into both. Development of automatic machines is complicated by the fact that the upright blade area is not always centered over the foot, eliminating it as a reference point. Tolerance variation in blade thickness precludes use of positive cam control.

Fillet area may be ground and polished by a high speed grinder with mandrel fitted with a coated abrasive pencil. Method gives longitudinal grinding or polishing lines required by some manufacturers. Another method uses a narrow abrasive belt on a small diameter contact wheel. Some manufacturers have built narrow belt machines using rubber-covered contact mandrels in conjunction with a belt idler and tensioning device.

Machines well-adapted to grinding and polishing of fillets are those having contact wheels with rounded edges. Abrasive belt is wider than the contact wheels and extends over the edge. Operator blends the entire fillet area with a single pass on the contact wheel.

Most recent development for this type of wheel is a belt with serrated edges. Grinding and polishing of smaller radii is possible, with a narrower belt. Serrated edge conforms easily to surface for grinding or polishing.

Six-station longitudinal blade polishing machine made by Murray-Way Corp. holds blade stationary while polishing head, contact pads and abrasive move back and forth to do the polishing. Polishes 800 blades per hour



Longer Life for Dies

Altered trim block receive carbide inserts that lengthen shearing die life 8½ times

SHEAR blocks of Carboloy cemented carbide trim flash from steel castings at Oliver Corp., Shelbyville, Ill.

Shear blades are used on a progressive die in a crank press in which mower blade guards are respectively pierced, riveted, then trimmed. Shear die originally had two steel trim blocks to simultaneously shear six faces varying in length from ¼ to ⅝-inch, three on each side of an SAE 1045 casting.

Tool life of trim blocks was short. They had to be changed at the end of each day (12,000 pieces). Cemented carbide on the cutting edges was the answer.

Original Blocks Altered — The original trim blocks were altered to receive inserts by grinding a step in each. Carboloy grade 55A tungsten carbide inserts were brazed on the steps at intervals along each block corresponding to casting faces.

Blow is taken on the ¼-inch face of the inserts. Because parts are not stripped, a 1/64-inch overhang of the carbide provides free clearance to facilitate removing the part before die head moves back to top. Carbide blocks increase tool life of the shearing die to over 100,000 pieces between grindings according to the company. Little grinding is needed at time of sharpening.

Photomicrographs of aluminum deposits. (A) Deposits of lower current densities. (B) Use of periodic reverse current produces some grain refinement. (C) Addition of dichloroethyl ether to the organic plating bath results in fine grain structure

Aluminum Electrodeposited at Room Temperature

Metal coats with good physical properties are produced by a new type organic plating bath. Methods for depositing molybdenum, tungsten, titanium, zirconium are studied

PRACTICAL process for electrodepositing aluminum at room temperature produces dense, ductile deposits of the metal from a new type of organic plating bath consisting of an ether solution of aluminum chloride and a metal hydride. Developed at the National Bureau of Standards, the new bath is expected to find important application for electroforming articles with close inside tolerances, such as waveguides, and for providing various types of equipment with a thin protective coating of aluminum.

Because aluminum is so far above hydrogen in the electromotive series of the elements, it has never been deposited from aqueous solutions, which always contain some hydrogen present in ionized form.

Aluminum is usually produced commercially from a bath of fused cryolite and aluminum oxide. However this process must be carried out at a high temperature, and the metal is obtained in a fused state, unsuitable for electroplating or electroforming. Electrodeposition from nonaqueous solutions has been tried in the past, with some success, but the procedure was too difficult for practical applications, and the deposits were lacking in purity, ductility and other desirable qualities.

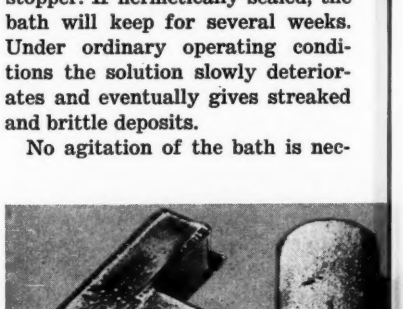
Unusual Metals Studied—Methods are being studied for depositing in good physical form metals such as molybdenum, tungsten, titanium and zirconium. Both fused salts and baths of organic solvents are being investigated. One of the first metals under observation was aluminum.

Success of the aluminum plating bath may give added impetus to the current widespread efforts to obtain other metals in pure form from nonaqueous solutions.

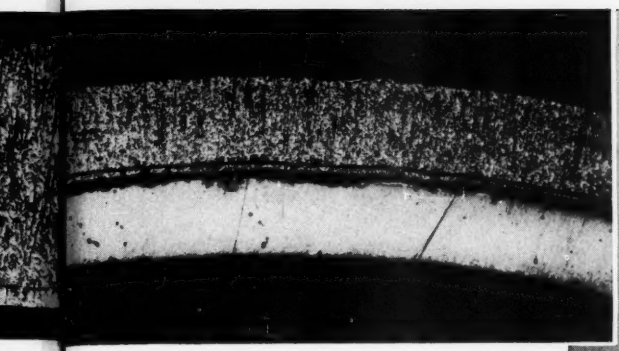
Aluminum plating bath is prepared by adding either lithium hydride or lithium aluminum hydride to an ethyl ether solution of anhydrous aluminum chloride. For best results, the ether should be anhydrous and alcohol-free. The concentration of the aluminum chloride is not critical and may vary from 1 to 4 molar. Current densities may be as high as 4 or 5 amp per square decimeter. However, if thick deposits are desired, the current density should not be greater than 2 amp/dm^2. Because of the high concentration of aluminum chloride in the ether, the bath is not as flammable as would normally be expected.

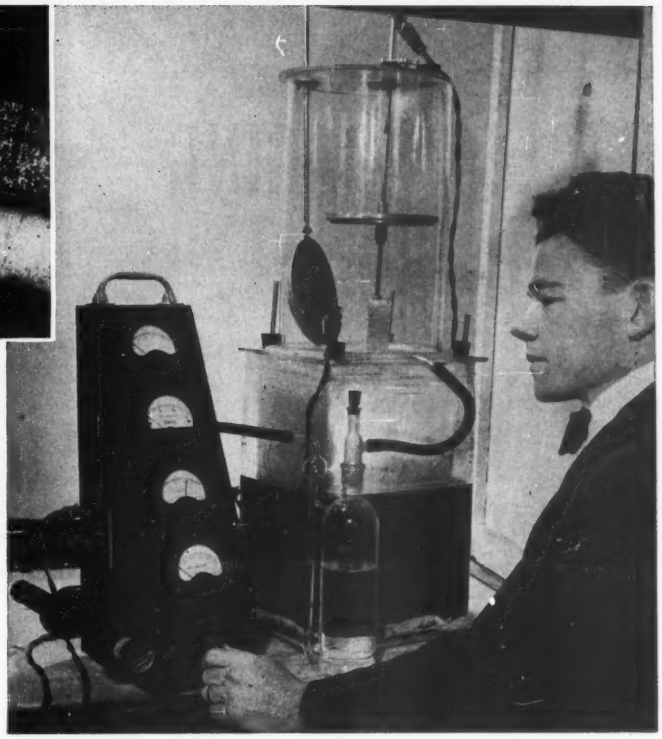
Moisture Excluded—To prevent the entrance of moisture, the bath is prepared and used in a closed container consisting of a glass plating vessel with a tightly fixed polyethylene lid. Anodes of aluminum rod pass through the lid, and the objects to be plated (cathodes) are introduced and removed through a central hole which is ordinarily kept closed with a rubber stopper. If hermetically sealed, the bath will keep for several weeks. Under ordinary operating conditions the solution slowly deteriorates and eventually gives streaked and brittle deposits.

No agitation of the bath is nec-



Objects electroformed of aluminum. The aluminum was deposited on copper, which was then dissolved out with nitric acid, leaving aluminum replica





Setup for electrodepositing aluminum at room temperatures. Aluminum rods entering plating vessel through rubber stoppers serve as anodes. Bottle in foreground contains sulphuric acid used as drying agent

essary. In fact, a quiescent bath is actually an advantage as the sediment from the anodes settles to the bottom of the vessel, making bagging of the anodes and filtration of the solution unnecessary operations.

The composition of the bath is easily controlled since the only constituent that changes appreciably in concentration during the plating process is the lithium hydride. Occasional additions of lithium hydride increase the life of the bath, but in time the lithium hydride becomes insoluble and the bath can no longer be used.

Lithium Hydride Vital—When sufficient lithium hydride is used, the deposits are white, mat and ductile; but if the lithium hydride content is too low (less than 3 or 4 g/l) the deposits become hard, brittle and grey. Still further reduction of the hydride content produces deposits that are dark and streaked and often crack or peel from the cathode. Ordinary deposits 0.01-inch or more thick are visibly crystalline, but this effect can be reduced somewhat by adding a small amount of dichloroethyl ether. Pitting, which frequently occurs in aqueous baths, is practically nonexistent in the ether bath.

Cathode and anode efficiencies for the process are approximately 100 per cent. Deposits 0.05-inch thick have been prepared, and thicker deposits should be possible if the sharp edges of the cathode are shielded to prevent treeing.

Tips on Forming 17 Chromium Stainless

SHEET METAL fabricators are forming 17 chromium stainless steel for the first time, says R. M. Nelson, Armco Steel Corp., Middletown, O. Mr. Nelson suggests that more would be using this grade if they were familiar with its fabricating practices.

One of the most important things to remember, says Mr. Nelson, is that 17 chromium stainless is not as ductile as the chromium-nickel grades. But it will take most ordinary forming without damage.

Two Reminders — These points must be considered in bending 17 chromium stainless: Radii should be as liberal as possible; there is a tendency to crack more easily when the sheet is severely bent parallel to the direction of rolling.

Wherever possible, jobs should be laid out so that severe bends will be at right angles or, at least, an angle of 45 degrees to rolling direction.

Recommendations—Here are recommendations advanced by Armco to help fabricators form 17 chromium (Type 430) stainless steel sheets: 1. 90-degree bends on material 0.050-inch (18 gage) and lighter. These should give no trouble. If the radius is sharp, "orange peel" may show at the point of bend. This is not harmful but can be lessened by using an inside diameter of at least two metal thicknesses. 2. 90-degree bends on material heavier than 0.050-inch. The inside diameter of the bend should be at least two metal thicknesses. 3. 180-degree bends on material lighter than 0.050-inch. Usually, but not always, these can be made flat—if the bend is transverse to rolling direction. If the bend is parallel to rolling direction, the inside diameter of the bend should be at least two metal thicknesses. That means there should be room for two thicknesses of metal in the bend after forming. 4. 180-degree bends on material 0.050-inch and heavier. The inside diameter of the bend should be at least two metal thicknesses if the bend is transverse and four metal thicknesses if it is parallel to rolling direction.

NUCLEAR CAGING

Controls

Abrasive Coating Thickness

Integration of continuous beta-ray gaging with production control on an automatic basis permits thickness and density of adhesive and abrasive to vary no more than one per cent

Radioactive isotope — strontium-90 — provides beta-rays that actuate gage for continuous measurement of unit weight and density as backing material passes through the abrasive coating machine at 350 fpm

A RADICAL new production technique installed at Carborundum Co.'s Coated Products Division plant, Niagara Falls, N. Y., is expected to set new standards of precision in the manufacture of coated abrasives. With the production setup, Carborundum can control thickness and density of adhesive, abrasive and final adhesive coat with an accuracy within one per cent.

Gages Integrated—The new technique, worked out with specialists of the Industrial Nucleonics Corp., Columbus, O., integrates five Accuray beta-ray gages, actuated by radioisotopes, into the coated-abrasive machine production line. Nuclear gaging is fast and super-accurate, so that automatic production control in the industry is at last commercially feasible. The five gages continuously assess weight of backing, weight of adhesive, weight of abrasive, weight after precure, and weight after final adhesive application on a line that travels up to 350 feet per minute.

Carborundum says this installation is the first of its type in the abrasives field. Up to now, production control in the estimated $90-million-a-year industry has been on a cut-and-try basis. This required stopping of machinery, cutting out an edge sample, checking the sample, readjusting rolls and feeds. Overshooting on specifications was common to make sure of meeting minimum thickness and density standards.

Each Run Recorded—Radioisotope gaging on a continuous basis provides permanent graphic records of each run. Its adaptability to automatic control not only eliminates the costly and inaccurate manual testing, but also reduces machine downtime, allows savings in the expensive materials used (resins, adhesives, aluminum oxide, silicon carbide, garnet), and prevents wastage of processed materials.

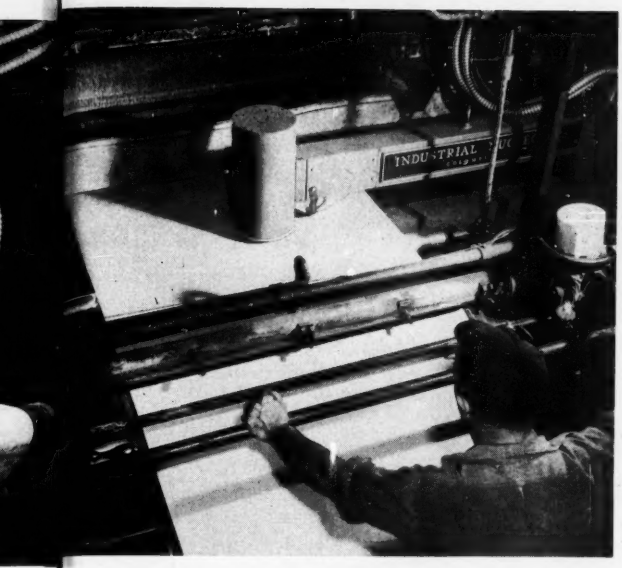
The Accuray gages are not influenced by outside factors such as temperature, dirt, or humidity. They do not contact the moving sheet at any time. In each gage, a sealed capsule of radioactive strontium-90 emits beta rays. As the material being measured moves past the aperture between the sources and the detector unit (a special type of ionization chamber), the amount of radiation passing through the material varies according to the density of the material.

The beta rays that get through to the detector unit ionize a gas and thus create a voltage that provides a recording and controlling signal. Since the gage is calibrated, variations in beta-ray transmission cause changes in signal that vary directly with change in weight per unit area. Recalibration is never necessary. The radioactive isotope is inspected every six months although its life is 30 years.

Five Gages per Machine — At Carborundum, each machine requires five Accuray gages. Gage No. 1 measures backing weight. This backing is usually paper, cloth, fiber, or combination. Variation in unit weight at this point affects future coating operations, such as adhesive roll setting. Gage No. 2 picks up weight of backing plus weight of adhesive coat.

Gage No. 3 measures weight of backing plus weight of adhesive, plus weight of abrasive. Gage No. 4 measures total weight after preliminary cure and before the final adhesive application. Gage No. 5 measures final weight after this last adhesive application.

Signals from the gages are translated into a trace on pen recorders. Superimposing the trace signal from gage No. 1 and the signal from gage No. 2 (each a different color) on one recorder, provides



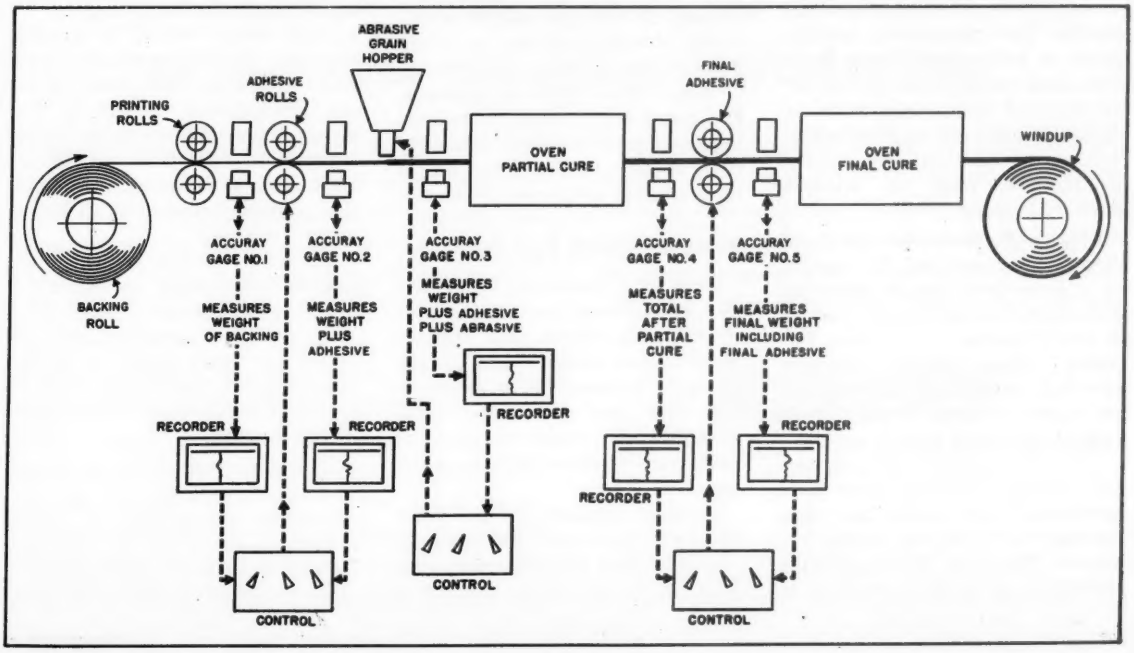
Second gage measures weight of backing plus weight of adhesive as material moves through coating machine. Abrasive material (background) streams onto the adhesive-coated backing in closely controlled quantity

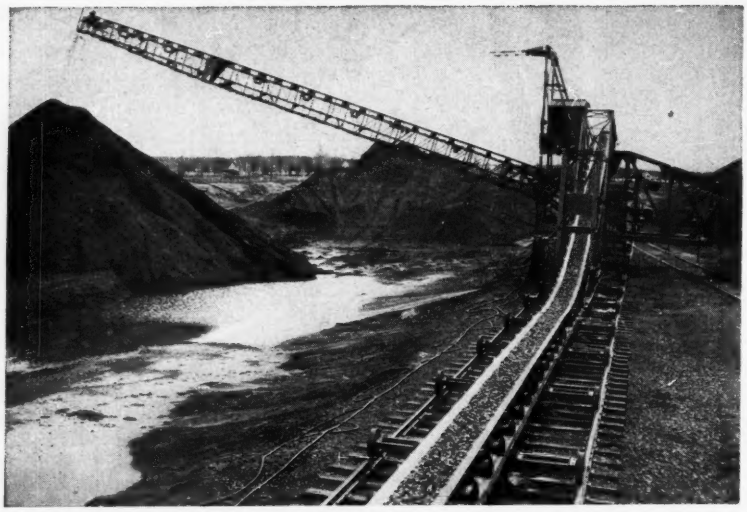
Recorders, synchronized with speed of material passing through abrasive coating machine, give continuous indication of whether specifications are being met. These records can be kept permanently for reordering

a visual comparison of machine coating. The two superimposed signals from gage No. 2 and gage No. 3 on a second recorder shows immediately any deviation from specification. When the two traces overlap, the material is being made properly. Any change is immediately noted. With its source known, proper correction in adhesive roll setting, abrasive feed, final adhesive roll setting, or speed of paper through the machinery can be made.

Coatings Uniform—A setup like this makes it possible to produce on a practical manufacturing basis uniform coatings despite lot-to-lot variations in backing materials, the slightest variation in flow of adhesive or abrasive onto the moving web, or variation in machine speed. In conventional manufacture, such errors tend to compound and might cause complete rejection of the finished product with

Schematic sketch indicates how precise gaging is combined with close production control in coated abrasive manufacture at the Carborundum Co.





Handling Capacity: 600 Long Tons per Hour

Self-propelled 115-foot radius revolving iron ore stacker operates at Holman-Cliffs mine, Cleveland Cliffs Iron Co., Taconite, Minn. The Link-Belt stacker, with track-mounted 30-inch wide trailer belt conveyor attached, can handle 600 long tons per hour and piles ore 42 feet high. Another unit, stationary-mounted, delivers washed ore from the concentrating plant to the trailer belt conveyor

resultant loss of valuable production time.

Production significance of the installation in bringing super-accuracy to a tough processing problem will reach into the user industries too. It is expected that customers will not only benefit from improved quality but that techniques will correspondingly improve, making practical even closer precision in metalworking.

Coated abrasives are used in practically every manufacturing activity. The commercial product comes in rolls, disks, belts, pads with many variations in the abrasive material (aluminum oxide or silicon carbide) and to many specifications of thickness and density of abrasive, resin or adhesive coats, or backing.

Affects Performance—Each of these components and its amount on a given area has an effect on performance of the coated product in stock removal and product finishing. Also, modern precision grinding methods have inevitably led users to demand very close control of coated abrasives.

Since manufacture is a continuous process, makers have been scratching their heads for years looking for a way to control the various feeds on the fast-moving machinery to produce products to strict specification. Progress in backing materials, adhesives, high-performance abrasive materials has been steady in the industry. But progress in production control has lagged behind the procession.

Integration of continuous gaging with production control on an automatic basis is expected to pay for itself in a matter of months on the basis of savings to Carborundum alone.

The company is finding other plusses, too. Process control is relatively simple, requires no additional operator skills. It is actually easier than previous methods. The gages are fitted with traversing controls that permit measurement at any desired point across the traveling web being processed.

New Tool Speeds Tank Parts

Tank part production is speeded by a special machine tool designed recently by Cross Co., Detroit. Working cast armor, Rockwell C35, the new machine drills, chamfers and taps four holes and drills chamfers and reams one hole in tank transmissions and rear wheel arms.

Possible production rates reach 64 pieces per hour. Of these, 32 are right and 32 left hand arms. This is accomplished through a duplex workholding fixture that holds one right and one left hand part in each station.

Machine is six-station, power operated, dial index table type. One station is used for loading, two for drilling, one for chamfering, one for reaming and one for tapping. Table is rotated by fluid drive.

Controlled Austenitics

Research re-emphasizes five danger areas to govern when heat treating austenitics

RESEARCH at Superior Tube Co. laboratories, Norristown, Pa., re-emphasizes five major danger areas that must be controlled during heat treating austenitic stainless steel alloys.

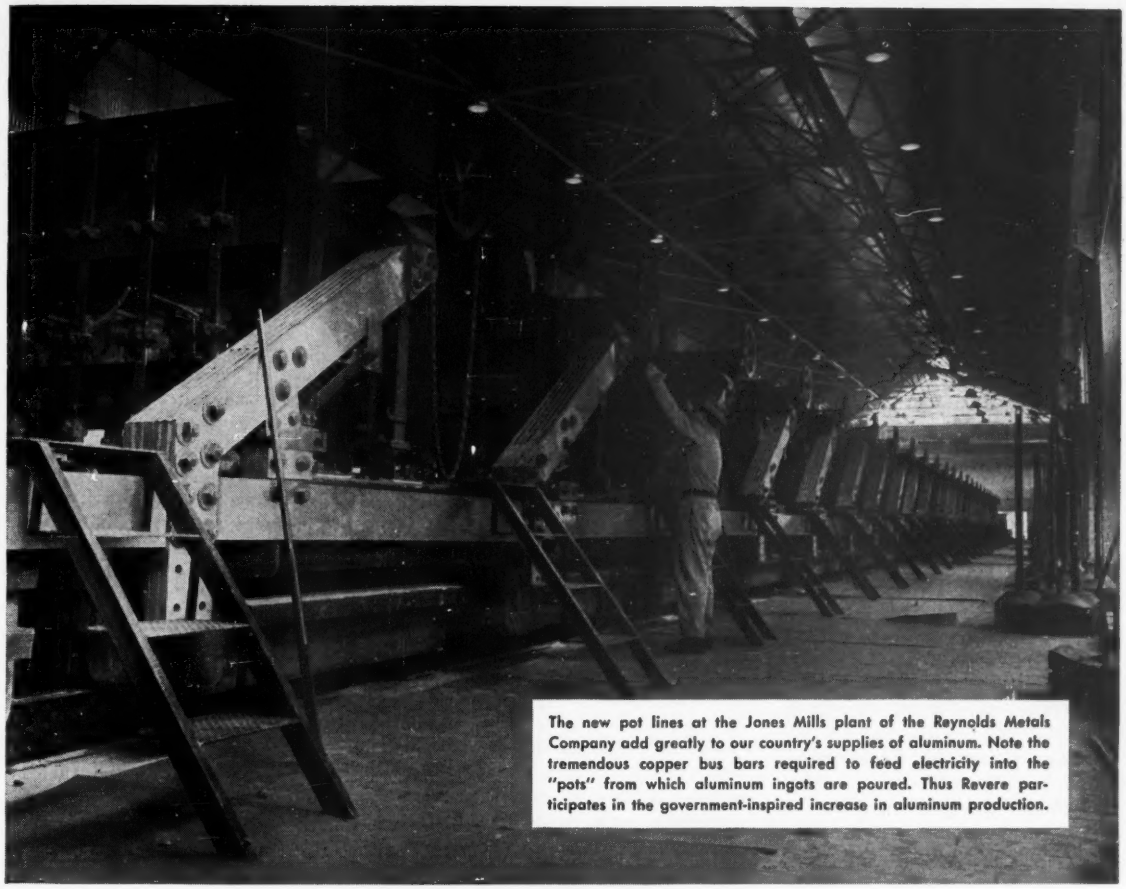
Popularity of the austenitics is due to excellent stain, discoloration and corrosion resistance. They carry a minimum 23 per cent chromium-nickel content. But many of the alloys' advantages can be lost if proper care is not observed in annealing and hardening and in handling during fabrication.

Carbide Precipitation — Of primary consideration when processing austenitics is the necessity for avoiding carbon precipitation. Many of these alloys are subject to damaging precipitation when heated in the 900-1600° F temperature range. For this reason, it is considered advisable to regard 1900° F as the minimum annealing temperature for the series.

Rapid water cooling is usually necessary to bring annealed austenitics through this range without precipitation, especially for heavy sections. Where water causes appreciable distortion, air chamber cooling is sufficient if it brings the material below 800° F within about 2 minutes.

Stabilizing elements such as titanium, columbium or tantalum are sometimes added to protect the alloy. In these instances, precipitation sometimes works an advantage. This is particularly true if the part is to serve in the 900-1650° F range.

Thin Chromium Oxide — Alloys containing more than 12 per cent chromium are difficult to anneal because a thin oxide of chromium usually results. However, Superior Tube's research indicates that



The new pot lines at the Jones Mills plant of the Reynolds Metals Company add greatly to our country's supplies of aluminum. Note the tremendous copper bus bars required to feed electricity into the "pots" from which aluminum ingots are poured. Thus Revere participates in the government-inspired increase in aluminum production.

It takes a lot of REVERE COPPER BUS BAR to increase aluminum production

● The Government has directed Revere to produce millions of pounds of copper bus bar for the new aluminum plants being put into operation in order to increase the output of this light metal that is so essential to defense. Copper is the ideal metal to carry the heavy currents required for the "pots" that produce aluminum from the ore. Thus aluminum and copper are intimately linked together. Aluminum is used in planes, ships, weapons, missiles, ammunition, and in many other defense applications. Copper, best of all the commercial metals in electrical conductivity, likewise has many vital tasks to perform for our armed forces, afloat, ashore, and in the air.

Revere is glad that its large capacity for the production of bus bar is so valuable in these times; in our long history of over 150 years of service we have always given everything possible in times of our country's need. However, we are regretful that today's government requirements materially limit our ability to fill civilian orders. We look ahead, eagerly and hopefully, to the time when the present urgent demands are met to such an extent that orders for bus bar and other Revere products can be filled more promptly.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

• • •

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.

SEE "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

bright annealing can be accomplished in atmospheres of perfectly dry hydrogen or cracked ammonia, and under conditions that effectively exclude air infiltration to the furnace muffle.

Where such specialized atmospheres are not obtainable, definitely oxidizing atmospheres are recommended. Scale formed under these conditions is most easily removed in subsequent pickling operations.

Carbon Absorption—All austenitic alloys absorb carbon rapidly at elevated temperatures. For this reason, these alloys should be cleaned carefully by caustic or solvent vapor degreasing before annealing.

Possibility for zinc embrittlement causes another area in which danger arises in austenitics. Alloys should never be annealed after contamination with zinc or zinc-containing alloys. Tubing or other parts formed on zinc alloy dies or brass guides or tools must be carefully cleaned before annealing.

Stress Corrosion Cracking — When heavily cold-worked, alloys sometimes show a tendency to crack under working operations. This is particularly true where severe local stretching is necessary. Reason for this behavior has been related to that of stress corrosion cracking.

Such cracking can often be prevented by a tempering treatment at 600-800° F, but with caution to avoid undesirable softening.

Talks Treat Better Handling

"Better Methods of Scrap Handling" was the subject of the second in a series of symposiums planned by Materials Handling Institute to encourage discussion among manufacturers and users. Session was held May 23-24 in Chicago.

W. E. Schirmer, vice president, Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich., presided during the two-day program. Mr. Schirmer is also president of Industrial Truck Association. The institute was represented through its industry service committee by John Beltz, manager, sales promotion, Thew Shovel Co., Lorain, O.

PILOT MODEL
. . . side pressure reduces hand forming

Press Has No Moving Parts

Sheet blanks are formed to a male die by hydraulically inflating a rubber bladder

A NEW TYPE hydraulic press, one-tenth the size of conventional presses, yet capable of exerting up to three times the pressures currently used to form thousands of sheet metal parts used in airplane construction has been developed by Douglas Aircraft Co. Inc., Santa Monica, Calif.

Designed by O. A. Wheelon, production design engineer, the new press is known as the Wheelon direct hydraulic press. It will be manufactured and sold under license by Verson Allsteel Press Co., Chicago.

Hot Forms Titanium—The press is designed to perform the type of shallow forming of heavy-gage aluminum and other sheet metals used in aircraft work as well as other metalworking industries.

Hot forming of titanium and magnesium, both coming into use in newer military airplanes, is possible on the press.

Press involves a single male die. Sheet metal blanks are placed over simple, inexpensive form-blocks and pressure is applied by hydraulically inflating a rubber bag or bladder mounted in the immobile roof of the press.

No Parts Move—Unlike the conventional single-acting presses, the Wheelon press has no moving parts except the bed.

Press permits pressures of 5000 to 10,000 psi. Aluminum sheet in gages up to ¼-inch have been formed perfectly. Handforming is reduced as much as 50 per cent.

Initial cost of the unit is low, and it can be used by small subcontractors for production of many aircraft parts. Hydraulic system for the press was produced by the Rucker Co., Oakland, Calif.

T-Rail Weight Cut 29 per cent

New T-rail tramrail section announced by Forker Corp., Cleveland, cuts weight about 29 per cent under the company's old section. Section weighs 6.9 pounds per foot, compared with 9.6 pounds for the former unit. Primary weight economy is achieved by reducing web height, making height from top of the bead to bottom of the flange 2⅝ inches.

Redesigned section permits use for light handling requirements of 500 to 1000 pounds, rolling live loads. Heavier demands can be accommodated up to 6000 pounds. Rail is made in 20-foot lengths, standardized to fit regular factory layouts.

Tread width of the new rail is 3-19/64-inch, or the same as the original section. This permits a tie-in with existing systems where plant expansions are planned.

Vacuum-Finish Display Planned

Equipment used to finish metal by high vacuum metallization will be featured by Distillation Products Industries at the Industrial Finishing Exposition, June 16-20 in Chicago.

Display will include a schematic diagram of a complete 48-inch high vacuum metallizing system with photographs showing how the various components are installed. Metal samples — coated and uncoated — will demonstrate various finishes possible from the system.

Similar equipment, already in use, is said by the company to be solving production problems by permitting manufacturers to coat complicated forms with a thin, even aluminum layer at mass production speeds. Finished products are then sprayed or dip-coated with clear or colored lacquer for protection.

READER SERVICE CARD PAGES 101 AND 102
ARE MISSING.

Op

400

W

A
ing
air
of
Lo
tin
3/
tas
cis
he
us
an
wi
su
th
ma
sic
es
an
ab
po
et
10
sp
w
is
u
je
st
th
Ju

Operator uses a jeweler's lathe to spin tubing for thermocouple shields

4000 TURNS ON A 1-INCH ARMATURE

Watchmaker's Lathe Produces Aircraft Parts

A WATCHMAKER'S lathe is playing a vital role in our country's air defense, according to engineers of the AiResearch Mfg. Co. of Los Angeles.

Lap-winding 4000 turns on a tiny armature only 1 inch long and 3/16-inch diameter, is one delicate task assigned to this highly precisioned lathe. The armature is heart of a vibration pickup coil used in an instrument that balances dollar-size air turbine wheels within five-millionths of an inch.

Almost Perfect — There is no such thing as perfect balance. But the company, which designs and manufactures more than 700 precision accessory products for the latest high altitude, high speed jet and turboprop aircraft, comes about as close as is physically possible when it tunes-up its midget air turbine wheels to spin at 100,000 rpm.

Any appreciable wobble at that speed could set up vibrations which would wreck the delicate mechanism of an air turbine refrigeration unit—and jeopardize the life of the jet pilot depending on it in the stratosphere.

Includes the Works—To insure that its equipment attains mechanical perfection, the company has invested in one of the most completely equipped, privately owned laboratory and test facilities in the country.

Most of the test equipment employed by the instrumentation laboratory isn't available on the market, so it must be made in the laboratory.

The Levin lathe is exceptionally well suited for this work even when meeting tolerances fifty times closer than those required in the finest watch, the ideal equipment needed to turn out a precision machine with tolerances of one ten-thousandth of an inch.

Many Uses—The lathe and its many precision accessories has a multitude of uses at AiResearch, ranging from shaping soap-stone coil forms 5/16 to 1/8 inch diameter, to spinning silver tubing for thermo-couple shields. The latter are part of a measuring device to record engine temperatures during actual operation of the aircraft.

One tough requirement that company technicians face in their every-day research and analysis is that testing equipment must not interfere with the normal operation of any piece of working equipment.

This means devising test equipment which is small, yet rugged enough to withstand the heat encountered in the combustion chamber of a gas turbine, or the blast of compressed air thrown-out by a two-stage compressor. Here again, the lathe and accessories have proved invaluable.

Polishes Too—Pilot tubes utilized as probes for temperature readings to determine what goes on inside a gas turbine engine, are made of 0.032 tubing inserted into 0.065 tubing. These are finished and polished by use of the Levin lathe. This operation includes forming the hemispherical head through which the actual temperature readings are taken.

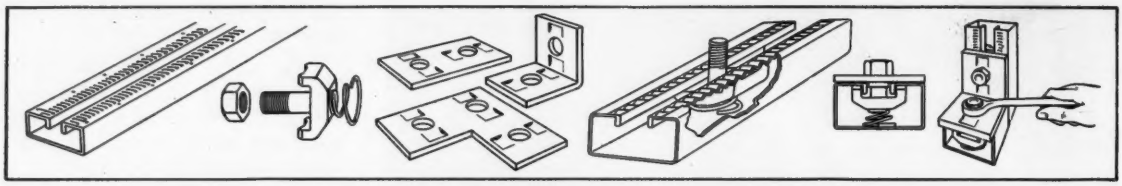
The company's success in the field of instrumentation is currently recognized by both the U. S. Air Force and the Navy. Its blueprints are being used by the Air Force at Wright Field, to set up testing devices for pneumatic and gas turbine equipment, and the company holds contracts from the Navy to set up the latter's test cells for further work on similar components.

Low Temperature Embrittlement

Embrittlement of materials when equipment operates at low temperatures is the subject of a study reported by National Bureau of Standards. Papers included in the volume cover manufacture of steels, development and application of chromium - copper-nickel steel and application of metals in aircraft for low temperature service. They also cite recent European work in the field.

Other topics consider tensile properties of nickel, copper and some copper-nickel alloys; properties of austenitic stainless steels; mechanical properties of high-purity iron-carbon alloys at low temperatures; dimensional effects in fracture; and brittle fractures in ship plates.

"Mechanical Properties of Metals at Low Temperatures" has 129 figures and 50 tables to illustrate its 206 pages. The volume is available for $1.50 from the government printing office, Washington.



Channel frame, spring T-bolt and locking fittings are the three components. Three sketches at right show how the framework is fitted, assembled and locked in place

UP OR DOWN IN A JIFFY

Metal Framing Racks Up Handling Savings

Consisting of only three components, framing can be adapted to almost any shelving or rack need, is rugged enough to be permanent

ARE YOU looking for ways to prune costs of handling materials? Here's a method that fits into nearly every plant with a minimum of installation pain.

The method stems from the development of a new steel framing material by Ainsworth Mfg. Co., Detroit. It consists of just three components: Channel frame, T-bolt, and lock-fittings. With these three basic parts the Mult-A-Frame, as it is called, can be built into structures for a million and one purposes.

In addition to such obvious industrial uses as racks, hangers and supports for materials or bins and building appurtenances such as ductwork and conduit, there are such other uses as work benches, scaffolds, machine mounts, etc.

Only two tools are required for building the channel frame structure: A hack saw and hand wrench. The saw is used to cut the channel frame to desired length, the wrench to bolt the fittings to the channel.

Design Is Key—Secret of the unit's simplicity and adaptability is primarily in the channel frame's design. Of cold-rolled steel, it is roll-formed into a box on one side of which the edges are bent inward leaving a half-inch wide continuous slot. The rectangular-headed bolts fit into this slot, and after a quarter turn are held snugly against the slot-side of the channel by coil or z-shaped leaf springs attached to the bolt heads.

To prevent the bolt's sliding, the head is formed with four contact points which engage serrations rolled into the channel frame at one-eighth-inch intervals. Along these serrations, which line the continuous slot, are inch and foot markings to make channel frame cutting and bolt locating easier.

Installation saves floor space, handling costs, speeds production. Rack holds 3000 pounds per opening

Framing makes portable racks that can be used on many different jobs. Aluminum frames are also available

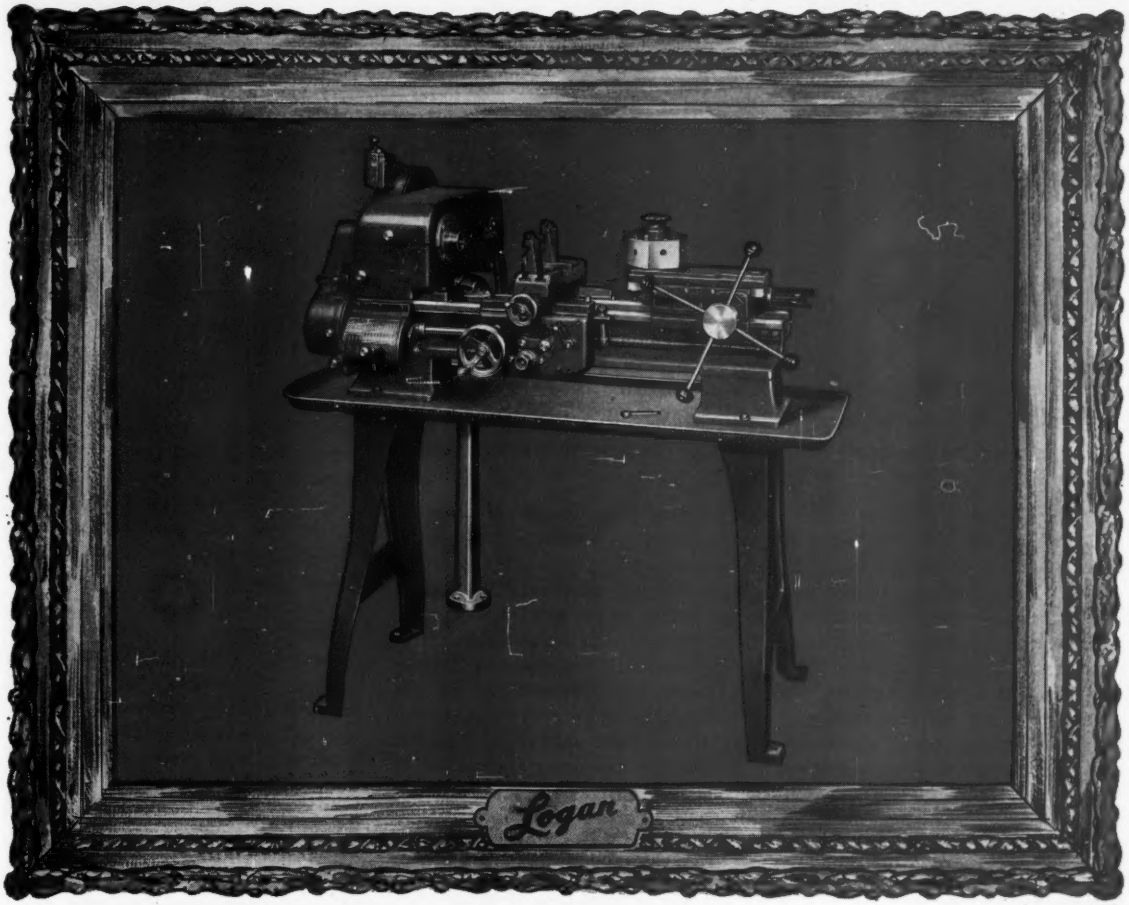
The lock fittings, used to attach one frame member to another, are stamped from 3/16-inch steel plate. On each side of the bolt holes in these fittings are embossed keys which fit into the channel slot and prevent rotation of the fitting after the nut has been tightened.

Assorted Sizes — The channel frame comes in several sizes and weights. Two, three and four members welded together for greater column and beam load and bolting capacity in different directions are available.

Two of the most popular channels are the 0.05-inch channel with overall size of 1⅝-inch by 13/16-inch and the heavier frame of 0.089-inch, 1⅝-inch square.

Among the unit's advantages, beyond the primary ones of ease of assembly and knock-down and quick conversion to different uses or space conditions, are its light weight (only half that of welded angle iron constructions) and low price. For special applications, aluminum channels are also obtainable.

Discussing the distribution program for the framing method, M. M. Roberts, manager of the newly formed division to handle its merchandising, says that 70 distributors will be selected and about 3000 retail outlets will handle the product. The division will design special units or complete layouts and ship these to customers ready for assembly without further cutting.



Logan 940-2
Quick Change Gear
Turret Lathe
11" Swing, 1" Collet Capacity,
1⅜" Spindle Hole

PRODUCTION MASTERPIECE

THE *Logan* LATHE

Puts Profit In Production

Industry's respect for the Logan Lathe as a metal-working production tool is not an overnight development. Through the years, Logan Lathes have put many a production line on a profitable basis. Today, with its 11" swing, 1" collet capacity, and 1⅜" spindle hole, the production efficiency of the Logan Lathe is being used on a wider scale than ever before.

The Logan is easily set up for every type of lathe turning operation. The Logan ball bearing mounted spindle has the sustained accuracy at high speeds to hold precision tolerances. The lasting accuracy and rugged durability of Logan construction keep production going at top efficiency, at minimum cost per finished part. For the production line, tool room or machine shop, no other lathe of comparable specifications can match the Logan in economy.

WRITE FOR THIS LOGAN LATHE AND SHAPER CATALOG

LOOK TO LOGAN FOR BETTER LATHES AND SHAPERS

LOGAN ENGINEERING CO.

4901 West Lawrence Avenue, Chicago 30, Illinois

BLAST FURNACE PRACTICE

By CHARLES E. AGNEW
Consultant
Blast Furnace and Sintering Plant Operations
Cleveland

Beneficiation of Air—XI(b)

Control of temperature head in the lower bosh affords the successful use of oxygen without disturbing temperature balance in the shaft raw material preparation operation

RANGE in the air/iron weight ratio, which can occur or exist in actual furnace operation from the use of different classes of raw materials and/or practice methods, is indicated in Table XVIII with data from furnace operations compared in this series of articles.

Since all raw materials charged into the furnace occupy space and drain heat from the furnace when they leave it, the percentage and ratio figures presented in Table XVIII emphasize the importance of air and gas weights to thermal requirements and effects within the furnace; also, their proportionate influence upon the mechanical requirements and their effects governing the passage of gaseous and solid products through the furnace. Their importance is further emphasized in this respect considering the fact that the solid materials contract in volume when converted to the molten state while the gaseous products expand in volume when in the presence of temperatures necessary to convert the solids to the molten state.

Since there is no actual practice data available for analysis or comparison, this discussion of oxygen enrichment of natural air is entirely theoretical. However, it is believed the reasoning presented is consistent with the thermal principles of blast furnace operation[20].

Constant Ratio Considered—All natural air (N_3O) contains a minor and fluctuating percentage of water vapor. In the discussion to follow, the variable water vapor content is disregarded, and a constant natural air weight ratio of 23 per cent oxygen and 77 per cent nitrogen is used.

United States Bureau of Mines research proved the location of the coke combustion zone. Also, with combustion, coke carbon is first converted to carbon dioxide (CO_2) but immediately reverts to carbon monoxide (CO) as the products of combustion come into contact with incandescent coke immediately adjacent to the combustion zone. Based upon these teachings certain fixed reactions can be calculated.

Combustion of carbon to carbon dioxide generates 14,580 Btu/pound C. With CO_2 formation 1 pound of oxygen will consume 0.375-pound of carbon. Comparison of the gas weight produced and the heat volume generated from CO_2 formation at the tuyeres per pound of natural air and per pound of natural air enriched 1 per cent in oxygen, is indicated in Table XIX. However, since CO_2 immediately reverts to CO (consuming 5830 Btu/pound C) the net product of the carbon combustion at the tuyeres is gas weight and heat volume leaving the CO_2-CO reversion zone.

Combustion of carbon to carbon monoxide (CO) generates 4370 Btu/pound C. With CO formation 1 pound of oxygen will consume 0.75-pound of carbon. Comparison of the final weight of the gas produced and the heat volume generated from the carbon combustion at the tuyeres per pound of natural air and per pound of natural air enriched 1 per cent in oxygen, is also indicated in Table XIX.

Increasing the natural air oxygen content in multiples of 1 per cent will progressively increase the gas weight and the heat volume in the percentages indicated in Table XIX, but the ratio of the percentage increases between the gas weight and the heat volume remain constant as indicated.

How Heat Is Distributed—Gas

TABLE XVIII
MATERIALS CHARGED INTO FURNACE PER 2240 LB OF IRON

	South	North 442	North Mathesius	East
Ore, scrap, stone, coke, air, lbs	18,108.34	14,438.53	13,313.00	10,045.60
Air and moisture, lbs	9,695.80	7,536.53	6,742.00	4,595.60
Lbs air in per cent of lbs materials	53.54	52.19	50.64	45.74
Air/iron weight ratio	4.29/1.00	3.36/1.00	2.97/1.00	2.03/1.00

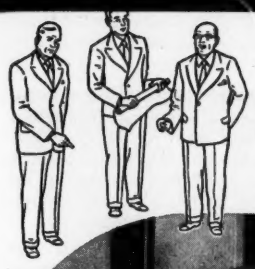
MATERIALS DISCHARGED FROM FURNACE PER 2240 LB OF IRON

	South	North 442	North Mathesius	East
Iron, slag, scrap, flue dust, gas, lbs	18,108.34	(*)	13,314.00	10,045.60
Gas and moisture, lbs	13,804.01	(*)	9,962.00	6,728.00
Lbs gas in per cent of lbs materials	76.23	(*)	74.82	67.12
Gas/iron weight ratio	6.16/1.00	(*)	4.44/1.00	3.00/1.00

* Data unavailable.

TABLE XIX
COMPARISON OF GAS PRODUCTION AND HEAT GENERATION

	Lb oxygen		Lb nitrogen		Lb carbon		Lb gas		Btu generated		% Increase gas	Btu
CO_2 formation —	0.23	+	0.77	+	0.08625	=	1.08625	=	1257.525			
	0.24	+	0.76	+	0.08976	=	1.08976	=	1308.701	=	0.0032	4.07
CO formation —	0.23	+	0.77	+	0.1725	=	1.1725	=	753.82			
	0.24	+	0.76	+	0.1800	=	1.1800	=	786.60	=	0.0064	4.34

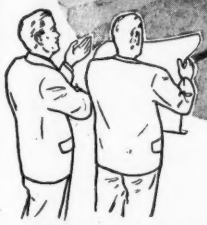


"Rugged construction means durability"

"Control is fully automatic for utmost efficiency"

NO WONDER THEY'RE ALL TALKING RUST SOAKING PITS

"Nothing like the Rust recuperator for economy"

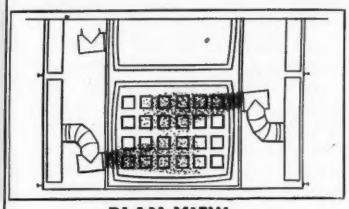


"Dual burners assure uniformity, greater charging capacity"

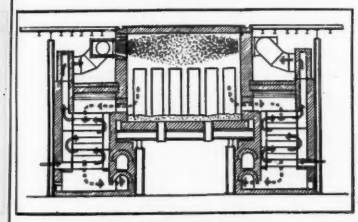
New CONTINUOUS 2-WAY TOP-FIRED

RECUPERATIVE SOAKING PITS

raise the standard for outstanding results



PLAN VIEW



CROSS SECTION

Naturally, furnace men are impressed with the improvements provided by Rust's new ultra modern recuperative soaking pits. Heat is uniformly balanced by diagonal two-way firing and ingots soak out evenly. Absence of impingement increases life of refractory walls and covers. Design permits construction in batteries of two or more holes, use of all fuels.

Rust also builds regenerative type soaking pits of new modern design. Those now in operation are producing results in fuel economy and heating speed never before achieved.

Whether you are interested in new recuperative or regenerative soaking pits, or require a modernization job you can rely on Rust. Over a quarter-century of experience is your guarantee.

THE WHOLE JOB IS ONE JOB WITH A "RUST PACKAGE CONTRACT"

One contract covers everything . . . from blue-print through start up. Rust assumes responsibility for design, manufacture, erection, and is prepared to undertake all phases of the work with its own forces, including wiring and piping. This results in substantial savings . . . One profit instead of pyramiding ones which accrue where many subs are employed.

RUST FURNACE COMPANY

Pioneers in Furnace Design

PITTSBURGH - PENNSYLVANIA

rising from the coke combustion zone is a mechanical agent for conveying heat from the zone and distributing it throughout the stock column. The rate of distribution will be governed by the ratio of the heat volume to the gas volume, and the ratio of the two volumes to the rate of the heat absorption and/or the consumption by the stock column solids.

Practice shows this rate always will be determined by the need for heat volume and heat volume concentration (temperature) in the respective divisions of thermal work as determined by the character of the raw materials used, the blowing rate, and the grade of iron being produced. Specifically, there is a distinction between the absorption of heat for the fusion of solids and the consumption of heat for the reduction of oxides (examples—silicon manganese, and phosphorous). In short, these several factors resolve themselves into the relationship between low temperature raw material preparation capacity of the furnace shaft and the high-temperature smelting capacity of the bosh and hearth.

Although there are numerous factors which exert variable degrees of influence in determining the relationship of the two capacities the following definition is believed to be applicable to any and all blast furnace operations:

1. Positive evidence of a deficiency in the raw material preparation capacity in relation to the smelting capacity is presented when there is blast heat in reserve but the ore/coke burden ratio cannot be increased without causing an irregular movement of the stock column in the furnace shaft.

2. Positive evidence of a deficiency in the smelting capacity in relation to the raw material preparation capacity is presented when the ore/coke burden ratio cannot be increased because of an insufficient heat volume in the bosh and hearth to smelt the entire amount of raw materials which can be prepared in the shaft with regular movement of the stock column there.

Using the foregoing comments as a premise, the effects from increasing the heat volume generation in the coke combustion zone through the enrichment of natural air with oxygen without proportionately increasing the means for the disposition of the increased volume can readily be visualized. Also, the influence of the disproportion in the increase between the gas weight and the heat volume upon an equitable division of heat between the divisions of work can readily be visualized:

1. Since the combustion of carbon to carbon dioxide (CO_2) generates a theoretical maximum volume of heat from the carbon combustion, the enrichment of natural air with oxygen would increase CO_2 and heat volume generation per pound of air used (see Table XIX).

2. Since temperature is a measurement of heat volume concentration there consequently would be a progressive increase in the combustion zone temperature, and/or the zone dimensions, unless means are provided to increase the rate of CO_2 and the heat volume transmission through the CO_2-CO reversion zone.

3. Since the temperature requirement in the smelting zone always is determined by the slag mineral composition, and that composition can be controlled through the chemical composition of raw materials charged into the furnace, the development of temperature in excess of the minimum for slag formation constitutes thermal waste.

4. Since the ratio of the gas weight to the heat volume is fixed be the natural laws of carbon combustion the only opportunity for the efficient control of the conditions described is through increasing the rate of the heat volume consumption without increas-

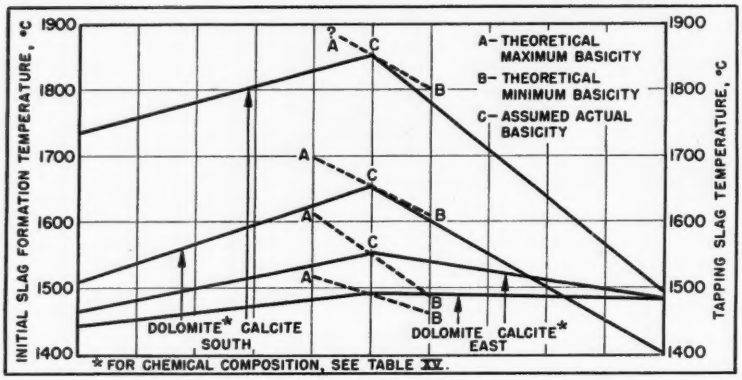


Fig. 19—Comparison of temperature head relationship for South and East furnace operations and the ratio changes of the slag base constituents

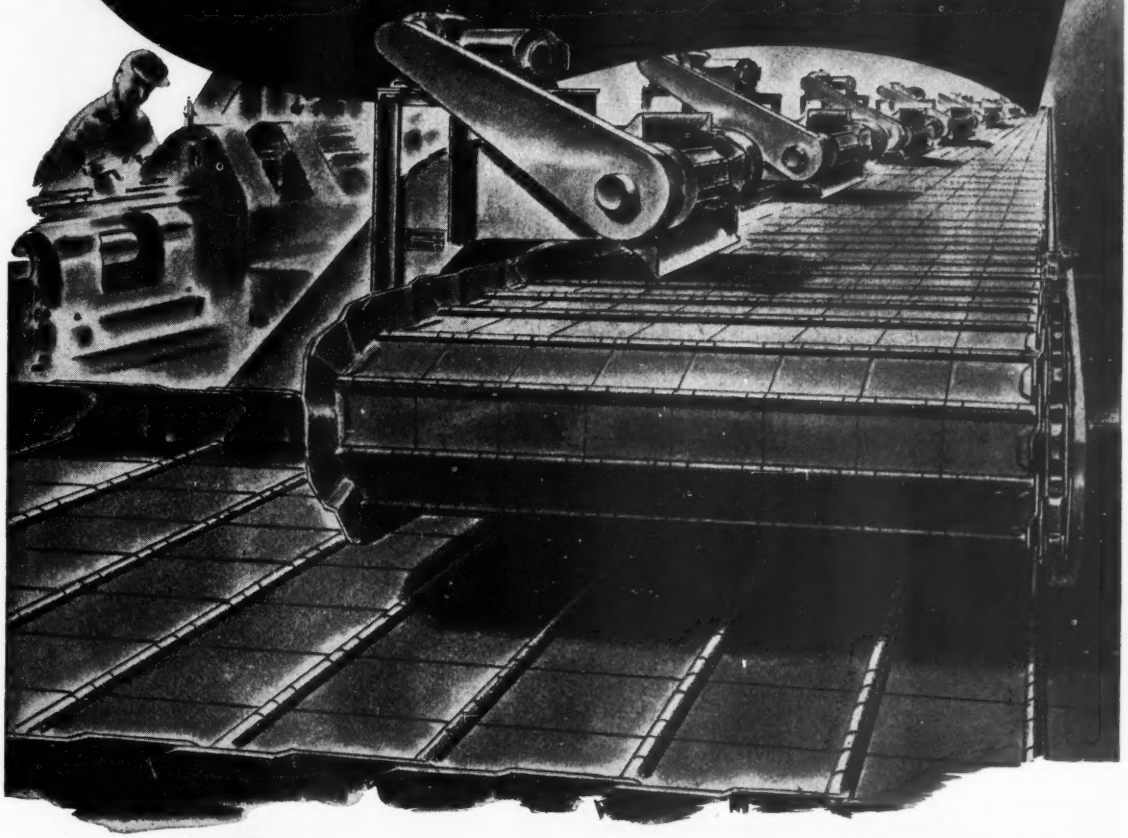
SOUTH

	Melting temp. °C	100 Per Cent Calcite — Basicity: Initial formation %	Maximum %	Minimum %	Tapping stage %	100 Per Cent Dolomite — Basicity: Initial formation %	Maximum %	Minimum %	Tapping stage %
Akermanite	1458	13.18	....	....	31.51	....	....	....	....
Tricalcium disilicate	1475	....	....	....	20.86	....	....	....	....
Monticellite	1498	11.76	....	9.71	....	64.15	37.58	47.58	41.73
Madisonite	1567	....	....	....	....	....	....	....	29.16
Gehlenite	1590	32.17	....	36.41	45.19	32.16	34.02	36.41	28.35
Calcium orthosilicate	2130	42.90	....	51.23	2.56	1.88	18.68	9.56	....
Periclase	2650	....	....	2.65	....	1.79	9.72	6.46	.73
		100.01		100.00	100.06	99.98	100.00	100.01	99.97
Calculated average temperature:									
Centigrade		1731	....	1801	1487	1506	1698	1609	1402
Fahrenheit		3148	....	3274	2677	2743	3088	2928	2556

EAST

	Melting temp. °C	100 Per Cent Calcite — Basicity: Initial formation %	Maximum %	Minimum %	Tapping stage %	100 Per Cent Dolomite — Basicity: Initial formation %	Maximum %	Minimum %	Tapping stage %
Akermanite	1458	30.63	32.18	31.91	31.51	64.00	28.78	41.40	33.91
Tricalcium disilicate	1475	24.64	12.16	28.56	12.21	....	....	....	....
Monticellite	1498	....	....	....	....	15.43	32.37	23.73	25.72
Calcium bisilicate	1540	14.25	....	....	16.05	....	....	....	....
Anorthite	1551	....	....	....	....	6.53	....	1.08	11.41
Gehlenite	1590	30.45	32.14	34.89	40.21	14.01	32.14	33.79	28.95
Calcium orthosilicate	2130	....	23.56	4.70	....	....	6.72	....	....
		99.97	100.04	100.06	99.97	99.97	100.01	100.00	99.99
Calculated average temperature:									
Centigrade		1468	1611	1495	1481	1443	1512	1468	1482
Fahrenheit		2674	2932	2723	2698	2629	2752	2674	2697

MAY-FRAN AUTOMATIC SCRAP HANDLING SYSTEM...



Speeds-up production

Increase machine tool production . . . eliminate manual lifting and hauling . . . reduce scrap handling time . . . with a **MAY-FRAN** engineered system. Hot, wet or highly abrasive chips, turnings and borings are continuously removed from operating production machines by CHIP-TOTE conveyors. Scrap is then discharged onto **MAY-FRAN** hinged-steel belting which transports it out of plant or to other disposal point.

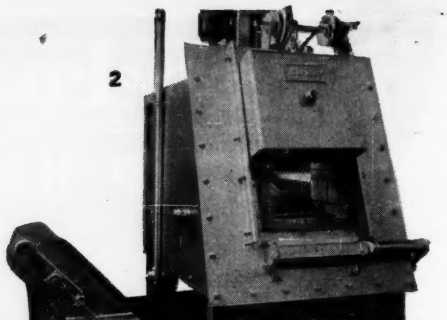
MAY-FRAN systems are completely automatic and provide maximum scrap handling efficiency. Speed of operation is synchronized with metal removing rate of machines. When drainage of coolants is required, steel belt can be furnished with perforated links.

MAY-FRAN
ENGINEERING, INC.

1725 CLARKSTONE ROAD • CLEVELAND 12, OHIO

For complete information on how a **MAY-FRAN** engineered installation can mechanize your scrap handling, write for illustrated catalog.

523-MF



1. In Muskegon, Michigan, a Lindberg pusher type furnace carbonitrides bearings for military vehicles.
2. In Delavan, Wisconsin, a Lindberg tilting and vibrating hearth furnace carbonitrides instrument parts.
3. In New York, a Lindberg roller hearth furnace carbonitrides in a commercial heat treat plant.
4. In Evansville, Indiana, a Lindberg pusher type furnace carbonitrides farm machinery parts.

a complete line of

CARBONITRIDING FURNACES BY *LINDBERG*

Lindberg Engineering Company, builders of carbonitriding furnaces for many years, offers a full and complete line including tilting hearth, vibrating hearth, roller hearth and pusher types. Well known manufacturers from all parts of the country have turned to Lindberg carbonitriding for case hardening production runs of low carbon steel parts.

NEW RADIANT TUBE DESIGN . . . Lindberg carbonitriding furnaces now use a revolutionary new type radiant tube. The most important development in furnace construction in years, this new tube, tested and proved in Lindberg research laboratories, completely obsoletes conventional radiant tube design . . . watch next month's issue of this magazine for detailed information on this amazing new development in radiant tube design and construction.

TROUBLE FREE ATMOSPHERE GENERATORS . . . The secret of high quality carbonitriding lies in the atmosphere. With Lindberg, long the nation's largest producer of controlled atmosphere generators, you can be sure of precisely the correct atmosphere.

ADVANTAGES . . . Carbonitriding has many advantages. It's an inexpensive, safe, clean process that minimizes distortion. An instructive case-history article in a recent issue of "Iron Age" quotes production facts and figures based on two years' operation of a Lindberg carbonitriding installation in one of the world's largest heat treating plants. Write for your copy!

LINDBERG FURNACES

Lindberg Engineering Company

2441 W. Hubbard Street, Chicago, Illinois

ing the heat volume concentration.

This can be done by increasing the need for heat volume in the region of the furnace immediately adjacent to the coke combustion zone. Through this means the increased heat volume generated in the coke combustion zone would be consumed without ill effect to an equitable division of heat to the regions of the furnace beyond the region immediately adjacent to the coke combustion zone.

Thermal requirements for raw materials having a wide range in chemical composition, and the divisions of thermal work, have been illustrated with a comparison of the thermal balances of the three actual furnace operations; effects which raw material chemical composition has on relationship of the respective divisions of work have been analyzed in detail in earlier articles of this series.

Involves Johnson's Theory—Any consideration of heat consumption in the divisions of raw material preparation and smelting involves Johnson's[1] two-thermal equation theory because of the distinction between the heat volume required for the work below the fusion temperature, and the concentration of the heat volume required for the work above the fusion temperature. When presenting his conception of blast furnace thermal principles Johnson says the amount of work a given volume of heat can do will vary with the temperature, or head, with which it is applied to the work. He stresses the importance of the "temperature head" but only for its application to the high temperature bosh and hearth work. This is done because of its importance to the efficient use of heat in the blast furnace operation and the opportunity it offers for the successful use of oxygen enriched air.

Although high temperature heat can do low temperature work faster than low temperature heat, it is thermally inefficient to have the temperature high enough to cause fusion in the zones of the furnace where the work performed does not require fusion because of the effect of high temperature upon the velocity of the gaseous products passing through the stock column—a phase of furnace oper-

Automatic Sprinkler

10-point FIRE PROTECTION

YOU NEED IT...

only "Automatic" Sprinkler provides it!

Fire protection is serious business. A single automatic sprinkler may be called on to decide the fate of your company, whether it is a small single-plant operation or a large multi-million dollar corporation. Insist on *all* the plus values offered with *10 POINT Fire Protection.* Here's what you get:

1 JOB SURVEY and ENGINEERING ANALYSIS: Detailed to meet individual needs.

2 BASIC FIXED TEMPERATURE SYSTEMS: Improved devices for fire detection and water extinguishment.

3 RATE-OF-TEMPERATURE-RISE PROTECTION: Recognized leaders in the development of high speed systems for all fire hazards.

4 QUALITY CONTROL: All system components—material and manufacture.

5 ACCURATE PREFABRICATION: Reduced installation time and expense.

6 QUALIFIED INSTALLATION CRAFTSMEN: Experienced in fire protection for all types of property.

7 NATIONWIDE ORGANIZATION: Expert fire protection engineers at your immediate service.

8 INSPECTION AND MAINTENANCE: Low cost service keeps fire-fighting equipment in fire-fighting condition.

9 CONTINUING RESEARCH: Constant improvement of old methods and development of new.

10 CONVENIENT PAYMENT CONTRACTS: Liberal lease, cash, or deferred plans permit payment out of savings.

Your "Automatic" Sprinkler Fire Protection Engineer is as near to you as your telephone. Call him today!

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA

YOUNGSTOWN 1, OHIO

OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

Get the facts!

Write for our informative 36-page book, "The ABC of Fire Protection." It's free!

"Automatic" Sprinkler

FIRST IN FIRE PROTECTION

FEATURING:

- **OPERATING ECONOMY**
- **GREATEST DURABILITY**
- **LOWEST MAINTENANCE**

You can save REAL money on the operation of electric trucks. Ready-Power DIESEL-Electric drive is the answer. Actual tests prove savings of 40% to 70% in operation and maintenance. Rugged DIESEL design provides *more* work per gallon of fuel, *longer* life span and *less* maintenance. And Ready-Power DIESEL-Electric Units provide the most efficient, most constant, most economical power source for electric industrial trucks.

Remember...Your Truck Is No Better Than Its Power!

CONTINUOUS-DUTY POWER UNITS

The READY-POWER Co.

3824 Grand River Ave., Detroit 8, Michigan

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

ation just as necessary as the preparation and smelting of solid products.

Also the control of the temperature head in the lower bosh of the furnace through the control of the slag mineral composition presents the opportunity for successful use of oxygen enriched through an increasing heat volume consumption in the bosh and hearth smelting operation without creating an excess temperature in the shaft raw material preparation operation.

Requires Higher Temperature—Practice data presented in this series of articles indicate that slag formation requires a higher concentration of heat (temperature) than any of the other furnace reactions. Also, while the temperature requirement is governed by the slag mineral composition the Btu requirement is governed by the pounds of slag produced. It is common operating knowledge that for every furnace operation there is a range of bosh temperature within which the furnace will operate smoothly and outside of which it will not. The extremes of the range may be described as:

1. The permissible low point of the range will always be the difference between the tuyere zone temperature and the free running temperature of the slag tapped from the furnace. Because the bottom plane of the bosh is the top plane of the tuyere zone (coke combustion zone) the temperature of the slag leaving the bosh and entering the tuyere zone must be sufficient to assimilate the coke ash released with the coke combustion and still have a tapping slag at sufficient temperature to be free running.

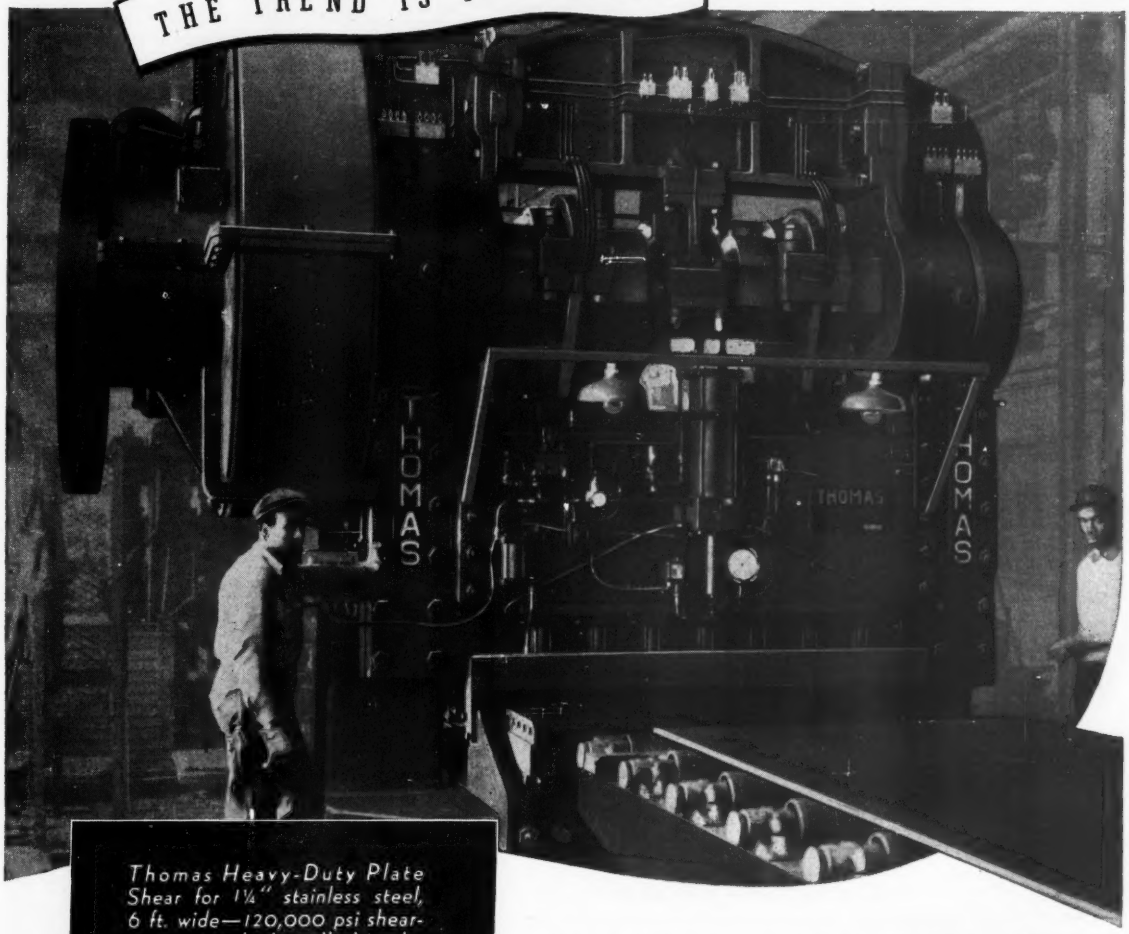
2. The preferred high point of the range will always be a temperature which permits a free flow of gas through the stock column in the shaft, with resistance but without restriction to flow.

Temperature Head—For conditions described, the difference between the lower bosh slag and the initial fusion temperatures, and the difference between the lower bosh and the tapping slag temperatures, constitute the "temperature head" with which bosh heat can be applied to smelting work.

Location of the plane where the existing temperature permits initial fusion is a variable[2] deter-

THOMAS *specializes in building* HEAVY SHEARS

THE TREND IS TO THOMAS



Thomas Heavy-Duty Plate Shear for 1¼" stainless steel, 6 ft. wide—120,000 psi shearing strength. Installed in the mills of the Eastern Stainless Steel Co., Baltimore, Md.

This is another example of Thomas' ability in designing and building machines to meet specialized shearing requirements for heavy mill service!

PUNCHES • SHEARS • PRESSES • BENDERS • SPACING TABLES

THOMAS
MACHINE MANUFACTURING CO.
PITTSBURGH 23, PA.

32

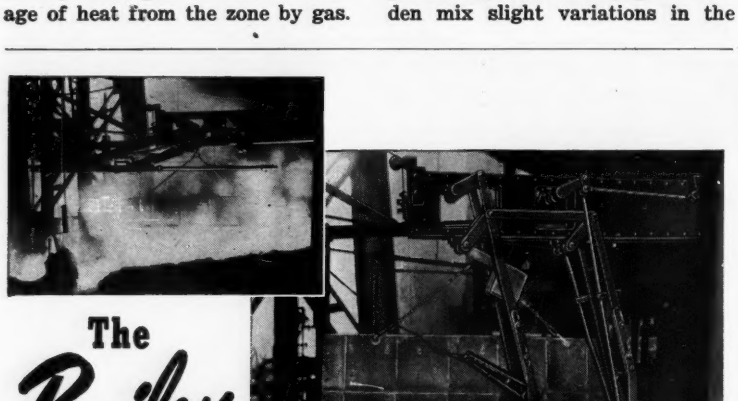
mined by the character of the raw materials used and the blowing rate. Because the slag mineral composition is the major influence governing the required temperature in the smelting operation a high temperature requirement for the initial stage of slag formation reduces the effectiveness of the smelting zone temperature head by increasing the depth of the high temperature zone in the furnace and by causing an excessive drainage of heat from the zone by gas. The high temperature requirement for tapping slag causes an excessive drainage of heat from the furnace and a proportionate reduction in the effectiveness of the smelting zone temperature head.

Exact knowledge of the temperature existing at any point of the range is not necessary to the direct furnace operation because the "working range" must be maintained regardless of what the end points may be. For any given burden mix slight variations in the bosh thermal requirements, caused by slight variation in the raw material properties, can be met normally with adjustments in blast temperature. When greater adjustments are needed they are met with changes in the ore/coke burden ratio and/or in the rate of blowing.

Relation of the smelting zone temperature head range to the initial fusion and tapping slag temperatures, and the effect of the slag mineral composition on that relationship, can be illustrated with reasonable accuracy by a calculation of slag temperature based on its mineral composition.

Fig. 19 is a comparison of the temperature head relationships for the South and East furnace operations which were compared in the thermal balance calculations, Part VII, and the effect of the change in relationships with the change in the ratio to each other of the slag base constituents (CaO and MgO).

Calculations Not Possible—As indicated, at South with the use of calcite stone the calculated theoretical maximum basicity stage of slag composition was beyond the range of the McCaffery diagrams, consequently the mineral composition and the temperature could



The Bailey

CINDER NOTCH STOPPER

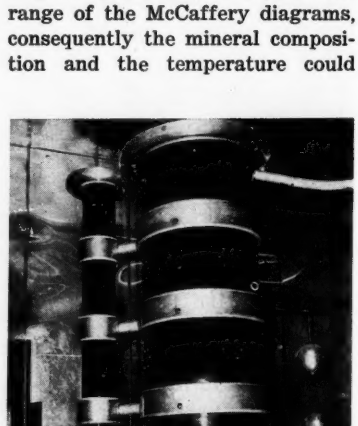
for Safe, SURE CLOSING

- Absolute safety while inserting or withdrawing
- Adaptable to any cinder notch
- Same mechanism inserts and removes botter
- True alignment with cinder notch at all times
- Water-cooled cinder bott and rod
- Botter rod when withdrawn is well above trough

No workman need enter the danger zone to close blast furnace cinder notches, since all controls of this service-proved device are located in a remote position. Using a unique gravity action for inserting the bott in the monkey, it employs air or steam power action only for withdrawal.

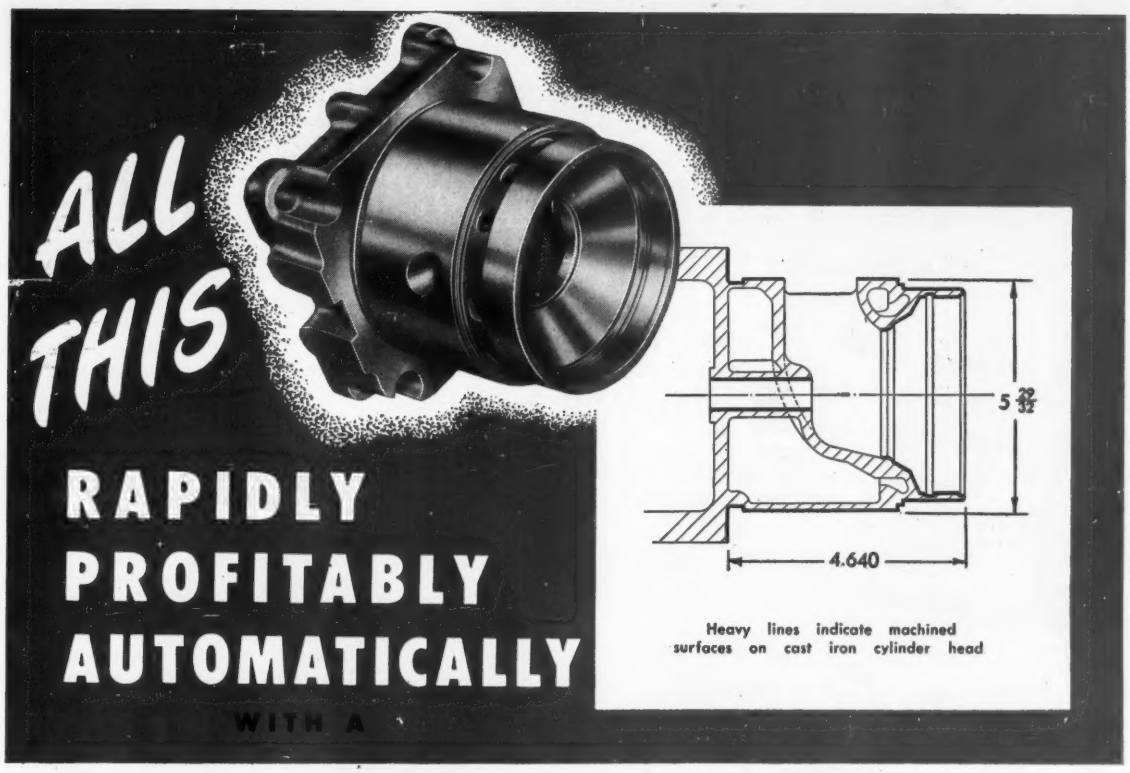
In operation, an air or steam powered cylinder withdraws stopper to the "out" position, with a latch locking the bott rod in position during the flush. A tag line is used to release the latch, with gravity action immediately inserting the bott in the monkey. For over 20 years the Bailey Cinder Notch Stopper has been known for dependability and safety throughout the steel industry.

WILLIAM M. Bailey COMPANY
ENGINEERS
LEADERSHIP THROUGH QUALITY
1221 BANKSVILLE ROAD PITTSBURGH 16, PA.



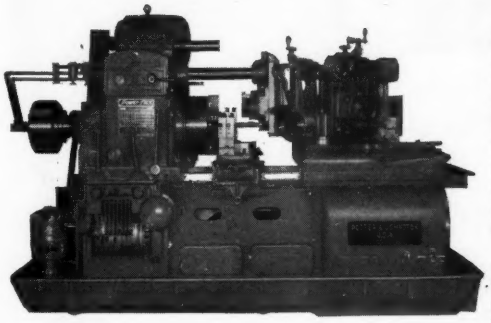
Generating Insulation

Search for more effective power transmission equipment insulation is aided by this 500,000-v direct current generator. Equipment consists of four separate oil-immersed rectifiers connected in cascade. It operates at General Electric Co.'s high voltage engineering laboratory in Pittsfield, Mass.



POTTER & JOHNSTON 5D *Power-Flex*

AUTOMATIC TURRET LATHE



The 5D Power-Flex — like all Potter and Johnston Automatic Turret Lathes — provides the power, flexibility and automatic operation needed for high output of close tolerance parts at lowest possible unit cost. Extra rigidity and permanent alignment mean long machine life, lasting accuracy and a long-term profit on your original investment.

For high-efficiency production of cast iron components like the cylinder head shown above — today's outstanding machines are Potter & Johnston Automatics equipped with P&J Precision Tooling. Based on more than a half century of specialized experience, this combination is your guarantee of more and better work and fewer rejects.

Interested in added productivity, precision and economy? Send today for this Bulletin. Remember—P&J engineers can help with your production problems. They'll recommend best combinations of tooling and operation sequence for low cost and high output. There's no obligation.

Precision Tooling Production for over 50 years

POTTER & JOHNSTON COMPANY
PAWTUCKET, RHODE ISLAND

SUBSIDIARY OF PRATT & WHITNEY — P&J — DIVISION NILES - BEMENT - POND CO.

WRITE DIRECT OR CONTACT THE PRATT & WHITNEY BRANCH OFFICE NEAREST YOU
BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DETROIT • LOS ANGELES • NEW YORK • PHILADELPHIA • PITTSBURGH • ROCHESTER • SAN FRANCISCO • ST. LOUIS • EXPORT DEPT., WEST HARTFORD
AGENTS: DALLAS, THE STANCO CO. • HOUSTON, WESSENDORFF-NELMS & CO.

What do you do when it takes hours... sometimes days... to change v-belts?

1 **Put one or several maintenance men on the job**

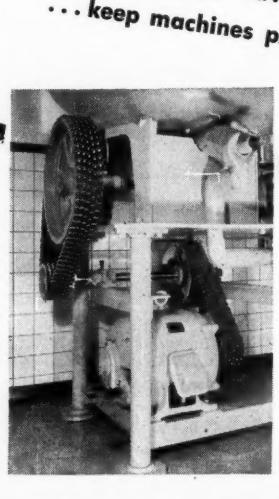
...and pay for repairs while production stands still

2 **Pay overtime**

...and have repair costs eat away your profits

3 **Standardize on VEELOS...**

...and change belts in up to 1/10th the time
...save labor, save time and save overtime
...keep machines producing for maximum profit



Comparison proves the value of VEELOS...

Minimum Inventory—4 reels of Veelos in the O, A, B and C widths can replace up to 316 different sizes of endless v-belts. If you use only one width of v-belt you can stock just one reel of Veelos.

Quick Installation—link construction makes it unnecessary to remove outboard bearings.

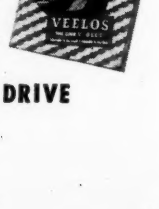
Complete Adjustability—vibrationless, full power delivery is assured because uniform tension on each belt in a matched set can be maintained.

VEELOS
THE LINK
V-BELT

VEELOS DATA BOOK

gives complete details on construction, installation and uses. We'll gladly send you a free copy of this 28-page fact-full book... write today.

MANHEIM MANUFACTURING & BELTING COMPANY
613 Manbel St., Manheim, Pa.



ADJUSTABLE TO ANY LENGTH · ADAPTABLE TO ANY DRIVE

Made in all widths in three types: regular, oil-proof, static conducting. Also in double V in O, A and B. Packaged on reels in 100-foot lengths. Sales engineers in principal cities; over 350 distributors throughout the country. VEELOS is known as VEELINK outside the United States.

not be calculated, but the temperature would have exceeded 3452°F. The ratio of the assumed temperature head (basicity stage) to the initial slag formation temperature is 1.07/1.00, with the margin between the theoretical high point of the working range temperature and the initial slag formation temperature being unknown. The high temperature head as indicated had no value to the furnace operation because of the ill-effect of the high initial slag formation temperature on the gas disposal through the furnace shaft.

Ratio of the temperature head to the tapping slag temperature (1.24/1.00) could not be utilized to advantage because of the ill-effect of the high initial slag formation temperature on the gas disposal and burden preparation. Therefore, it had no value to the furnace operation.

Substitution Effects a Change—As indicated, with the use of dolomite stone the ratio of CaO to MgO is substantially changed from the like ratio with the use of calcite stone. With the change in stones there is substantial change in slag mineral composition and the relationship of slag temperatures in its three stages of composition. With the changes cited the percentage of high melting temperature minerals existing in the initial and tapping stages is reduced to a minimum, and the ratio of bosh temperature to the initial formation temperature becomes 1.10/1.00, and the like ratio to tapping slag temperature becomes 1.18/1.00.

The safety margin between the theoretical low point of the working temperature range and tapping slag temperature is 405° F, also the margin between the theoretical high point of the range and the initial slag formation temperature is 378° F. The great advantage to furnace operation, as indicated by the change in the slag mineral composition, is in the difference between the initial slag formation temperatures. Without a sacrifice in the safe ratio of bosh to tapping slag temperatures, the initial stage temperature of the dolomite slag is 437°F, or 13 per cent less than the initial stage temperature of the calcite slag. The benefit to

the A-B-C of M-S-T

A ALWAYS MAKES POSSIBLE
B BETTER PRODUCTS
C AT LOWER COST

Michigan
Electric Resistance
WELDED
STEEL
TUBING

A Quality Product

Muffler Inlet Pipe

ROUND
⅜" to 4" O. D. 9 to 22 gauge
SQUARE-RECTANGULAR
½" to 2" 20 gauge, 1" to 2¾", 14, 16, 18 gauge
Carbon 1010 to 1025

Michigan Tubing has uniform strength, weight, ductility, I. D. and O. D., wall thickness, machinability, and weldability. It can be flanged, expanded, tapered, swaged, beaded, upset, flattened, forged, spun closed, fluted, and rolled. Available in a wide range of sizes, shapes and wall thicknesses, prefabricated by Michigan or formed and machined in your own plant.

This is an excellent example of Michigan workmanship in the performance of several intricate fabricating operations to most exacting tolerances.

The pipe manifold end is expanded to 2.225" I. D., a flange superimposed, and a flanged ferrule press-fitted for immediate assembly to exhaust manifold. Two bending operations with minimum reductions permit full flow of gas to hold back-pressure to a minimum. Muffler end diameter of tube is increased by expanding and a bead superimposed to form a "gas-tight" joint.

Michigan engineering and fabrication know-how make for accuracy and economy in the manufacture of this and many other tubular products. Why not consult Michigan about your fabrication problem.

Consult us for engineering and technical help in the selection of tubing best suited to your needs.

Plus Fabricating of our own tubing Michigan is interested ONLY IN THE FABRICATION OF Stainless steel, copper, brass and aluminum tubing.

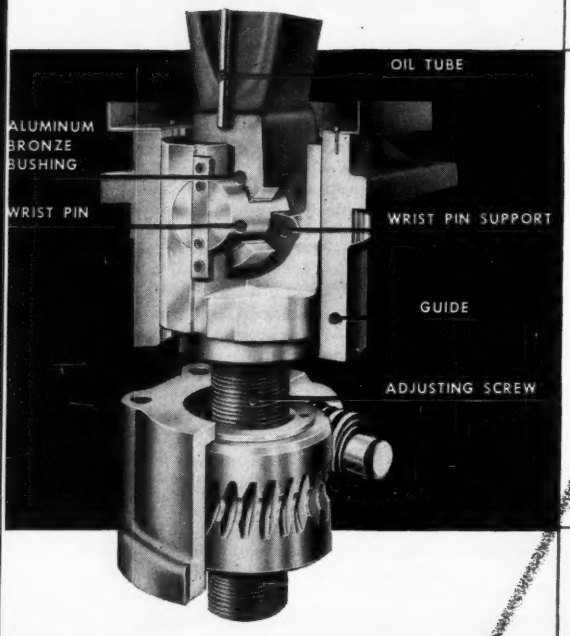
RESISTANCE WELDED STEEL TUBING
Michigan STEEL TUBE PRODUCTS CO.
THE OLDEST NAME IN ELECTRIC

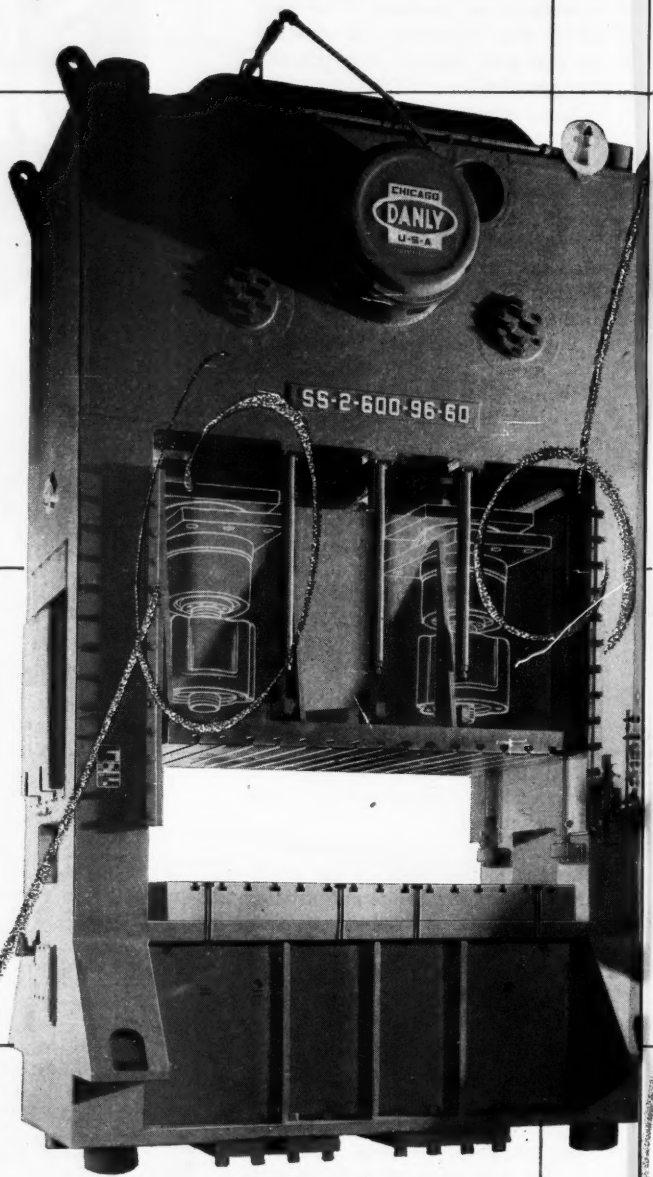
More than 35 Years in the Business
9450 BUFFALO STREET • DETROIT 12, MICHIGAN
FACTORIES: DETROIT, MICHIGAN—SHELBY, OHIO

DISTRIBUTORS: Steel Sales Corp., Detroit, Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. Hyland Co., Dayton, Ohio—Dirks & Company, Portland, Oregon—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—Hugh Davis, Jr., Sewickley, Pa.—Strong, Carlisle & Hammond Co., Cleveland, Ohio—Globe Supply Co., Denver, Colorado—W. A. McMichaels Co., Upper Derby, Pa.—A. J. Fitzgibbons Co., Buffalo, N. Y.—Harry E. Clark & Co., Houston, Texas—J. B. Beaird Co., Inc., Shreveport, La.

when you buy presses.

Slide Adjustment Mechanism illustrates how Danly design gives intermediate support to heat treated and ground wrist pin, eliminating bending stress under load. Upper assembly is retained within vertical guides permitting the use of extra long adjustments because there is full strength at extended settings. The construction shown, plus automatic oil lubrication, makes practicable the use of close machine fits at the wrist pin joint. This is Danly construction.



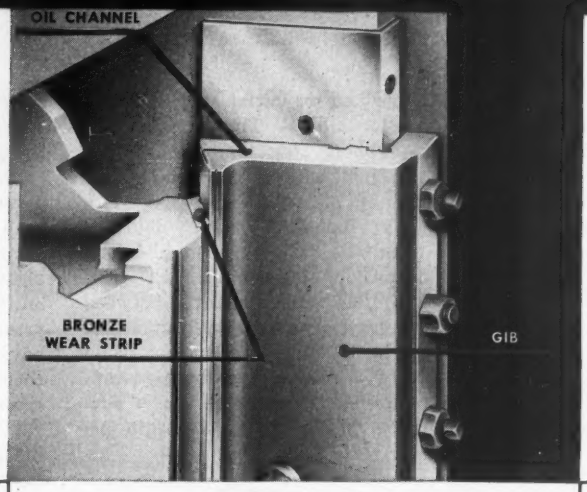


A Danly 600 ton Single Action, Straight Side Press equipped with automatic oil lubrication—including gibs.

Cutaw
how oi
oil lub
extrem
is stand
able c
gibs en
ing str
Danly

ta

D



Cutaway of Gib Construction shows how *oil* is supplied to gibs. Automatic oil lubrication of the gibs, permitting extremely close alignment of the slide, is standard on most models and available on all Danly presses. Extra long gibs entirely contain slide during working stroke, prolonging die life. This is Danly construction.

take a close look at construction

Extra strength and precision will save you both production time and money. Dies will last longer, stamped parts will meet closer tolerance requirements and press down time will be reduced.

Construction features like those shown here—plus specially engineered controls and the exclusive Danly Cool-Running Clutch—are reasons why industrial leaders throughout the country are choosing . . .

DANLY PRESSES

Danly's complete engineering staff is at your service to help you select the best presses for your job. Write today—and ask for the Danly Straight Side Press Catalog.

DANLY MACHINE SPECIALTIES, INC.
2100 South Laramie Avenue, Chicago 50, Illinois

It costs less to run a DANLY PRESS!

Single Action Straight Side

Autofeed

Underdrive Single, Double, Triple Action

Gap Frame

Double Action Straight Side

DANLY®

MECHANICAL PRESSES . . . 50 TO 3000 TONS
HYDRAULIC METALWORKING EQUIPMENT

furnace operation would be reflected in a more efficient disposal of gas through the stock column in the shaft, the preparation of more ore for smelting, and with an increase in iron production with a lowered fuel rate.

Practice With Calcite—As indicated, at East with calcite stone, the ratio of the average bosh temperature head (basicity stage) to the initial slag formation temperature was 1.06/1.00 with a margin between the high point of the range and an initial slag temperature of 253° F. The ratio of bosh to tapping slag temperature was 1.05/1.00 with a safe margin of only 57°F.

As indicated, with dolomite stone, the ratio of bosh to initial formation stage temperature was 1.01/1.00 with a margin between the high point of the range and the initial stage of formation being 154°F. The ratio of bosh to tapping slag temperature was a neutral 1.00/1.00 with a margin between the low point of the range and the tapping slag temperature being −57°F.

Since the practice data of South operation were compiled by Bureau of Mines research before present knowledge of slag mineral composition was available for study, it must be assumed that the operators of the furnace learned the advantage of dolomite stone to their operation through trial and error methods. The trial and error experience using calcite and dolomite stones at the East operation was described in Part VII of this series.

South, with dolomite stone, using a light burden (ore, stone, scrap/coke = 2.20/1.00) and low blast temperature (957°F) had a bosh temperature head ratio to tapping slag temperature of 1.18/1.00. South was deficient in raw material preparation capacity in relation to bosh and hearth smelting capacity. Use of oxygen enriched air would only aggravate the relationship and probably would create bosh thermal relationships comparable to those indicated with use of calcite stone.

Working Range of Two Fluxes—East, with calcite stone, using a heavy burden (ore, stone, scrap/coke = 3.00/1.00) and high blast temperature (1550°F) had a bosh temperature head ratio to tapping slag temperature of only 1.06/1.00; with dolomite stone, the like ratio was a neutral 1.00/1.00. With calcite stone there was only a 57°F margin of safety between the low point of the bosh working range temperature and tapping slag temperature; with dolomite stone there was a 57°F deficiency between the low point of the range and the temperatures of the tapping slag.

Only the uniformity in chemical composition of the fully beneficiated raw materials used at East made such operation possible. But with such materials and the heavy burden the smelting operation was thermally deficient in relation to shaft preparation capacity. Oxygen enriched air could be used because the disproportionate increase in heat volume generated in relation to the gas-weight produced would serve to increase and/or protect the low temperature head

Good for many years at hard labor

YORK·GILLESPIE

CUSTOM-BUILT MACHINERY

for

Steel Mills • Steel Fabricators
Industrial Manufacturers

Now is the time to modernize your industrial machinery. For never before has American industry encountered such a challenge! Its double job of producing for defense and civilian needs demands plant machinery built stronger, to last longer.

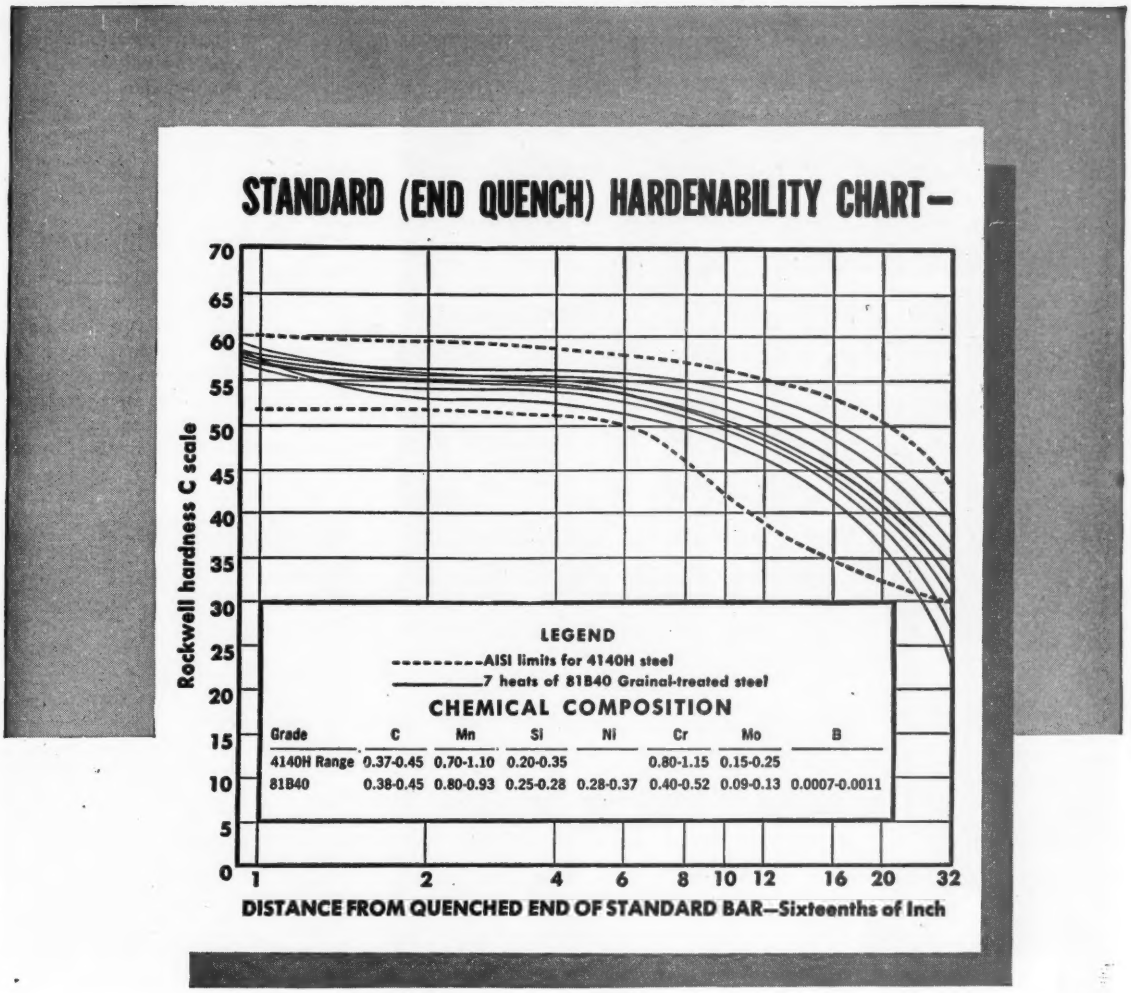
York-Gillespie Manufacturing Company — designers and custom-builders of special machinery — and York Engineering and Construction Company form an unbeatable team working to develop and build machinery to fit your production requirements.

From Your Own Blueprint or Our Design

Special machinery is created in our shops from your own design . . . or we will design and fabricate to solve your specific problem.

Send York-Gillespie your machinery specifications. Your inquiries will receive prompt attention.

YORK-GILLESPIE MANUFACTURING CO.
and
YORK ENGINEERING & CONSTRUCTION CO.
931 Penn Avenue, Pittsburgh 22, Pa.



Consistent Hardenability obtained in Boron Steels made with GRAINAL ALLOYS

The most common test for boron steels is measurement of hardenability by the end quench or Jominy hardenability test. Today's steel substitutions are made on the basis of similar hardenability since a reasonable prediction can thus be made of the hardness and strength of a given part.

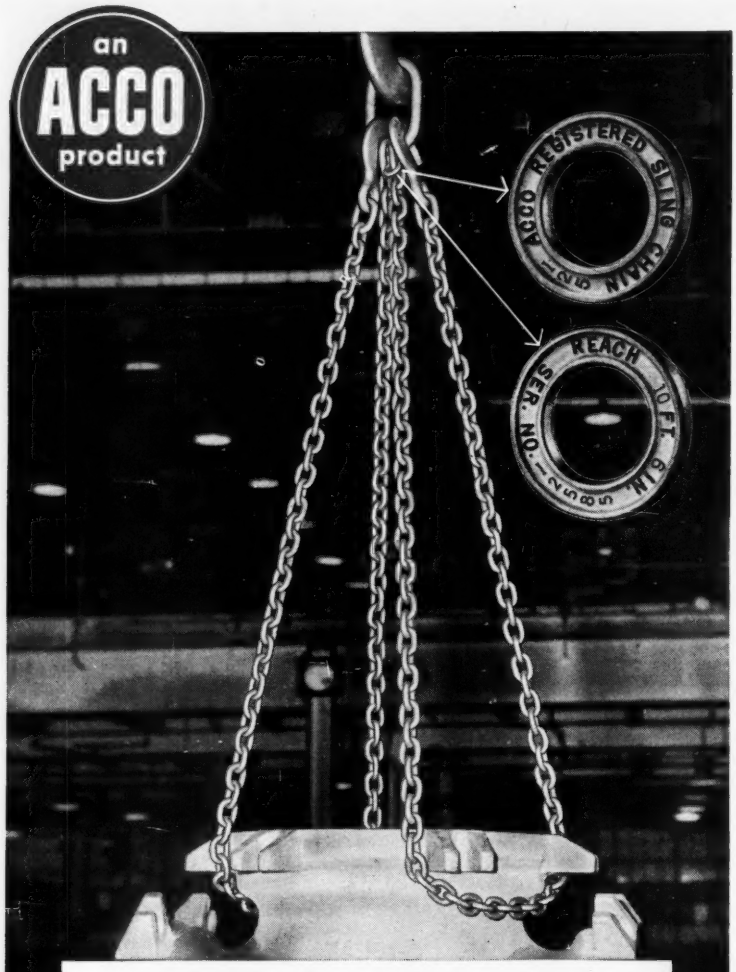
The curves above show the relationship between the hardenability of a series of seven heats of 81B40 steel and the hardenability band for 4140H steel, which it often replaces. The 81B40 heats were made in one electric furnace shop, and the remarkably consistent hardenability shown by the curves was obtained by the use of Grainal alloy as the means of adding the boron.

Consistent hardenability means consistent strength and hardness after heat treatment, which is the aim of every fabricator. The best proof that the Grainal alloys insure this objective is found in the successful use of three million tons of Grainal-treated steels.

VANADIUM CORPORATION OF AMERICA

420 LEXINGTON AVENUE, NEW YORK 17, N. Y. • DETROIT • CHICAGO • CLEVELAND • PITTSBURGH

MAKERS OF ALLOYS
VANCORAM
CHEMICALS AND METALS



ACCO Registered Sling Chains are Versatile

● Here an ACCO *Registered* Sling Chain is used in a double basket hitch. It could also be used as a two-legged bridle, or as a double choker. The tough 125 Endweldur ACCALLOY Chain is much lighter in weight and is easy to handle. It has great service life. The permanent identification ring on every ACCO *Registered* Sling Chain is your sign of safety and guarantee of quality.

See your AMERICAN CHAIN distributor. He'll show you how easy and economical it is to choose and use the best sling chains made.

ACCO

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

American Chain

TRADE MARK

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

ratio without delivering excess heat to the shaft operation.

(To be continued)

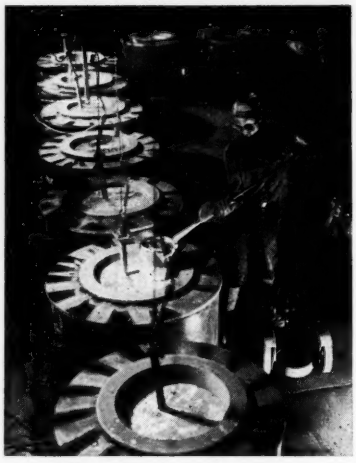
BIBLIOGRAPHY

[1] "Principles, Products and Operation of the Blast Furnace", by J. E. Johnson Jr., 1918.
[2] Technical papers Nos. 391, 397 and 442, Bureau of Mines.
[39] Application is being made for patents covering certain features on use of oxygen, as mentioned in this series of articles.

Iron Pick-Up Minimized

UNCERTAINTY of aluminum supply makes it more important than ever to protect this metal from contamination by iron pick-up.

Several substances are used to form slurry coatings that minimize such ferrous adherence and at the same time protect valuable foundry equipment. Among these is In-



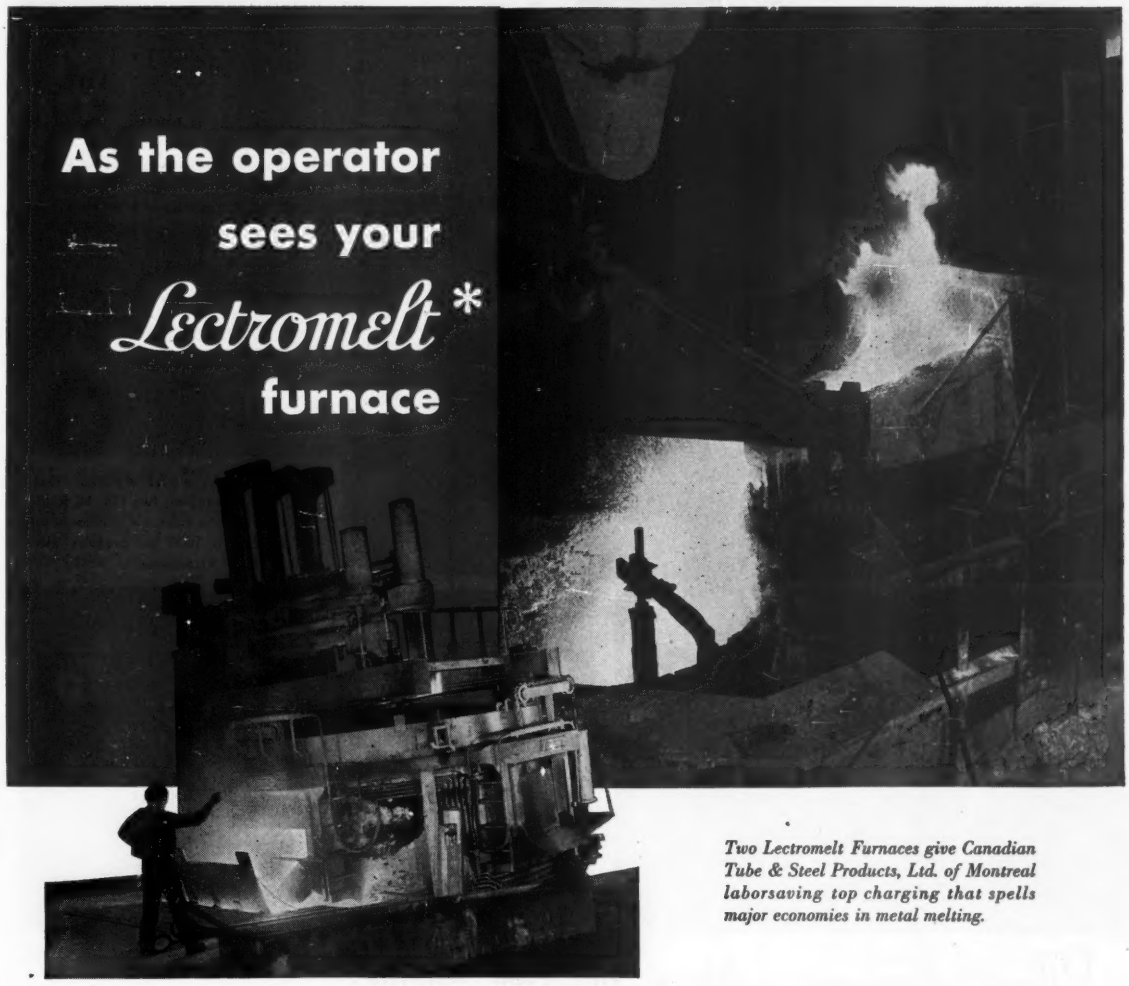
MOLTEN ALUMINUM
. . . coating cuts ferrous adherence

sulating Powder R20. This takes the form of an extremely fine powder obtained from the insoluble residue of bauxite digestion in the Bayer alumina process.

Simple Formula—Manufacturer is Aluminum Ore Co., subsidiary of Aluminum Co. of America. Average formula is quite uncomplicated. It requires 2-4 pounds of powder, ¼ to ½-pound of sodium silicate and 1 gallon of water.

Powder and water are mixed and heated to a boiling point. Sodium silicate is added and the mixture again brought to a boil. Resulting slurry can be applied to parts by spraying, dipping or brushing. Metal should be heated to 200-400° F before application.

Sandblasting Helps — Surfaces smoothly machined or covered with an oil or grease film may have to



Two Lectromelt Furnaces give Canadian Tube & Steel Products, Ltd. of Montreal laborsaving top charging that spells major economies in metal melting.

He feels an instant response to every demand:
Power supply and regulation equipment were individually engineered, electrode arms counterbalanced, to provide such sensitive and flexible controls.

He gets back into production promptly after every heat:
Top charging with the Moore Rapid Lectromelt Furnace is accomplished quickly and smoothly, as the furnace top lifts and swings on its massive oil bearings. It means many man-hours saved, lower consumption of electrodes and longer lining life. You see the difference in power saved.

He recognizes its added safety:
Side-mounted tilt mechanism prevents jamming and injury of operating equipment by spills and burn throughs.

All these add up to higher quality production, with more tons for fewer dollars. For a free copy of Catalog No. 8 telling you more of this story, write Pittsburgh Lectromelt Furnace Corporation, 323 32nd Street, Pittsburgh 30, Pennsylvania.

Manufactured in **. . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . AUSTRALIA: Birlec, Ltd., Sydney . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein, Genoa.**

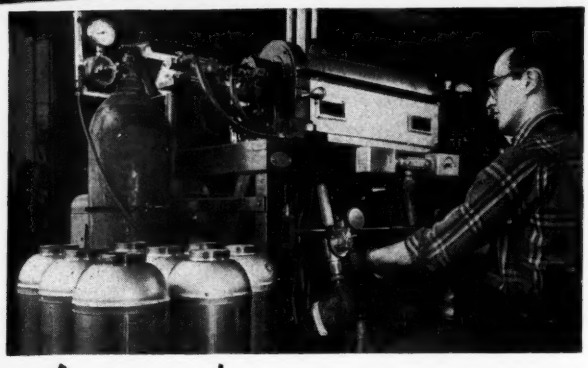
*REG. T. M. U. S. PAT. OFF.

WHEN YOU MELT... MOORE RAPID *Lectromelt*

500 psi hydrostatic pressure tests, 43% higher than usual test requirements, are standard procedure with Pyrene extinguishers before leaving the production line (high pressure tests of 1000 psi show no breakage).

Semi-automatic Heliwelding of type 301 stainless steel is a high-speed operation at the Pyrene Manufacturing Co. of Newark, N. J. Here, jig-mounted stainless steel cylinder bodies are longitudinally weld-seamed at 90" per minute.

Finger-tip controlling two No. 10 Radiagraph arms, one operator simultaneously Heliwelds two 1000 psi pressure-tested end seams in 41 seconds.



Silent fireman with a 40-foot reach...

HELIWELDED PYRENE FIRE-STOPPER

Discharging an easily directed 40-foot stream, the new stainless steel gas-cartridge-operated Pyrene Water Type Fire Extinguisher eliminates two important fire protection problems... annual recharging and the danger of working with acid ... and its price is comparable to older soda-acid equipment.

Pyrene's answer for meeting the cost problem? Lighter weight equipment, stronger-made with Airco's semi-automatic Heliwelding process.

Why? Because Heliwelding, with its inert gas shield, eliminates the need for flux. No slag is formed, welds are exceptionally strong and clean. Gas shielded electrodes provide a highly concentrated arc permitting high-economy production welding with a minimum of distortion.

If you're welding thin sections of the "problem" metals, stainless steel, aluminum, on a production basis, Airco Heliwelding can help you. Find out how from your nearest Airco office. Please address Advertising Department, 60 East 42nd Street, New York 17, N. Y. for your copy of ADC-709: Heliwelding.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND AN AIR REDUCTION PRODUCT

AIRCO®

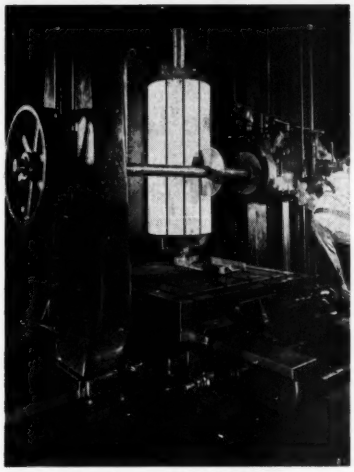
DEALERS AND OFFICES IN PRINCIPAL CITIES

AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY • AIR REDUCTION PACIFIC COMPANY

REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL

DIVISIONS OF AIR REDUCTION COMPANY, INCORPORATED



Ten Slots in 2½ Hours

Metal slitting saw made by North American Products Co., Milwaukee, completes ten slots in a cast iron rotor in 2½ hours. On this job, slots in the 2000-pound rotor had to be 5¾ inches deep, 52 inches long, 0.140-inch wide—plus or minus 0.002-inch

be sandblasted to get an adherent coating. After sandblasting, best results are achieved from applying the first slurry coat with a spray gun.

If a thicker coat is found necessary, subsequent layers can be brushed on satisfactorily.

Other materials used to prepare such protective coatings include talc, whiting and lime.

Science Board Members Named

Eight members of the 24-member National Science Board of the National Science Foundation, whose initial two-year terms expired this month, were reappointed by the President for full six-year terms.

The appointments to the top-level research advisory group were confirmed by the Senate for: Sophie D. Aberle, special research director, University of New Mexico; Robert P. Barnes, head, department of chemistry, Howard University; Chester I. Barnard, chairman of the board and retiring president, Rockefeller Foundation; Detlev W. Bronk, chairman of the executive committee of the board, president, Johns Hopkins University; Gerty T. Cori, professor of biological chemistry, school of medicine, Washington University; Charles Dollard, president, Carnegie Corp. of New York; Robert F. Loeb, Bard professor of medicine, college of physicians and surgeons, Columbia University; and Audrey A. Potter, dean of engineering, Purdue University.

Silver-Clad Stainless Reported

Silver clad on stainless steel is another application of the Kinney process, announced by American Cladmetals Co., Pittsburgh. Silver clad stainless is turned out to fill an order for communication equipment. Company says the silver surface provides electrical conductivity superior even to copper.

Excavator Has Many Purposes

Gar Wood Industries, Findlay, O., report production of a ¾-yard excavator and 20-ton truck crane. Model is convertible in the field to shovel, crane, dragline, clamshell, trench hoe or pile driver. It can be built as a completely convertible foundation borer.

Design features power actuated

The rediscovery of the good earth of New Jersey is the *newest* activity among industrial leaders everywhere.

Here at the Crossroads of the East, *new* plants are springing up today in all sections of the state, as manufacturers take advantage of the preferred geographic locations which New Jersey offers.

There is *new* industrial development in the areas adjacent to the *new* steel plants being constructed, as well as in the sections served by *new* research facilities and *new* transportation arteries, such as the New Jersey Turnpike.

Yes, *new* industries are buying sites for use today and tomorrow. You can benefit, too, from everything which New Jersey offers industry, including these *new* opportunities for excellent locations for your plant.

If you have not done so, write Box H, Public Service Electric and Gas Company, 76 Park Place, Newark, N. J., for the new brochure "An Industrialist's View of the Crossroads of the East."

PUBLIC SERVICE

Cut with...

PORTER CUTTERS

What's your metal-cutting problem?

The simplest, most economical, most efficient answer is often Porter Cutters

Cut SO MANY SIZES

From small wire up to ⅝" concrete reinforcing rods and 3½" lead-sheathed communications cable.

Cut SO MANY HARDNESSES

From aluminum, brass, copper etc. up to stainless and hard drawn steel with a hardness of 500 Brinell and 50 Rockwell C scale.

Cut SO MANY METALS

Both ferrous and non-ferrous metals, — soft, medium and hard including case-hardened or heat-treated alloy steel.

Cut SO MANY WAYS

Head on... around corners... from all angles ... in close quarters ... and just straight cutting.

It's always a good plan to consider Porter Cutters *first* when confronted with a metal cutting problem. They're fast, economical and efficient . . . can be used anywhere.

H. K. PORTER, INC.
Somerville 43, Mass.

HKP

THERE ARE PORTER METAL CUTTERS FOR ALL THESE MATERIALS

BOLTS RODS WIRE ROPE BAR STOCK CHAIN NUTS

Also manufacturers of

PORTER-FERGUSON Auto Body and Fender Tools and Equipment · PORTER PRUNERS

drum clutches, direct right angle drive, optional hydraulic coupling and foundation borer attachment.

Radiography: Lower Cost

Survey shows use of atomic waste makes nuclear inspection and control more practical

ATOMIC WASTE products, applied to industrial radiography, should make the process practical over a wide range of metals.

This is the forecast Stanford Research Institute advances after surveying possibilities for the Atomic Energy Commission. Summarizing the survey's conclusions, Paul J. Lovewell, director of the research group, explains that certain by-products of atomic pile production—now waste—can be recovered and used for radiographic inspection at a cost substantially lower than is possible under present methods.

Useful Techniques—In addition, Mr. Lovewell points out that radioactive fission products, used with Geiger counters and suitable film, promise many useful techniques for measuring and controlling industrial processes.

Advantages, points out Mr. Lovewell, lie in low cost and availability of waste materials. These are added to the varied energy levels that can be obtained in comparison with present sources. Radiation instruments to measure such properties as liquid levels or material density are already available, but would become more economically feasible.

Relatively Low Cost—Industry should be able to get fission products at relatively low cost, compared with present limited and expensive radioactive sources. The report places cost of a single gram of radium, giving one curie of radiation, at $15,000-$20,000.

It estimates that one curie of radiation from fission products will probably be pegged at between a few cents and a few dollars. This depends on terms at which AEC makes the product available, cost of processing and extent of industry demand.

Other Applications—Use in radiography and operation of control instruments are two of the more obvious applications for the

STOP DOWNTIME...

Cut Handling Costs!

The Gould "Thirty"—
America's Finest
Industrial Truck Battery

It costs real money when a truck goes out of service because of battery failure. There are two sure ways to keep materials moving, men and machines working: 1. Power your trucks with Gould Industrial Batteries; 2. Maintain <u>all</u> your batteries, regardless of make, with the Gould Plus-Performance Plan. This *free* system of preventive maintenance is making money for hundreds of industrial firms by helping them keep their batteries new, longer.

It will pay to learn more about Gould Industrial Truck Batteries and the Gould Plus-Performance Plan. Write Gould Battery Information Headquarters for full information.

GOULD
Industrial Batteries

GOULD-NATIONAL BATTERIES, Inc., TRENTON 7, N. J.

Always Use Gould-National Automobile and Truck Batteries

It can be carried on both shoulders

TODAY, American industry is faced with the job of "carrying water on both shoulders"—helping to meet the needs of our security program, and at the same time contributing to a strong civilian economy.

As its part in this double effort, Kaiser Steel is producing increasing quantities of steel for freight cars, barges, oil derricks, ship repair, pipelines; and is also supplying western manufacturers of important civilian products.

This is possible because Kaiser Steel has constantly expanded its facilities to keep pace with the needs of western industry. With this result: An increase in rated capacity to 1,536,000 ingot tons by mid-1953. Nearly 3 times the amount produced in 1944—the peak year of World War II.

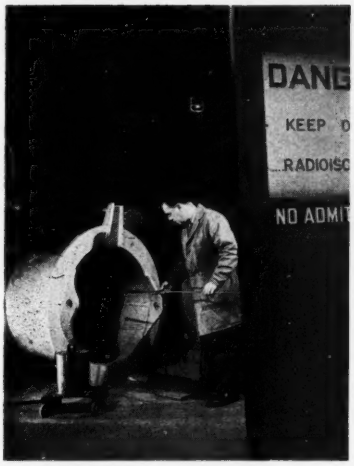
More evidence that the West Coast's only integrated, *independent* steel plant is helping to build a stronger West... and a stronger nation!

It's good business to do business with

Kaiser Steel

built to serve the West

PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • hot rolled strip • hot rolled sheet alloy bars • carbon bars • structural shapes • cold rolled strip • special bar sections • semi-finished steels • pig iron • coke oven by-products For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**



Radiographic Check

Quality of weld in heavy parts can be checked accurately by radiography. Here, a radiologist at Chicago Aircraft Engine Division, Ford Motor Co., prepares to photograph interior structure of a steel crucible. Film is strapped around the casting base and radioactive capsule fastened to the rod.. Rays penetrate the casting, recording all flaws plainly on the film

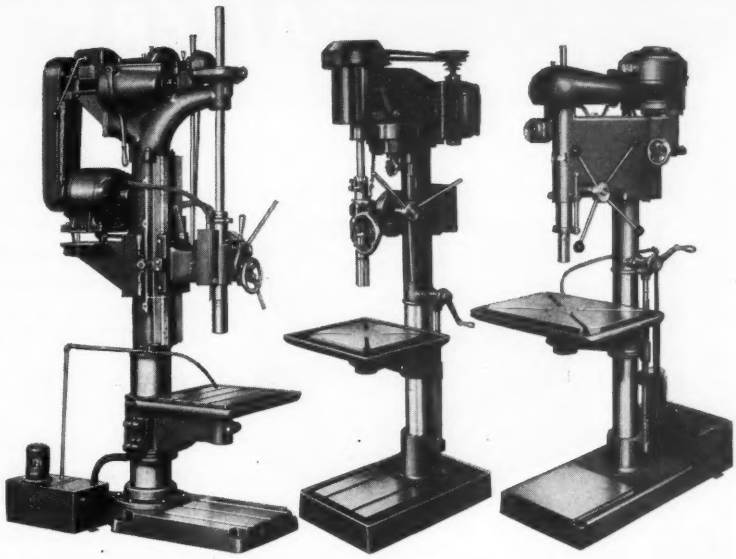
low-cost by-products. On the basis of the survey, other functions may be possible. Mr. Lovewell cites examples in eliminating static electricity in certain manufacturing processes, improving engine performance and permitting development of several new chemical synthetics.

Fission by-products are formed when U-235 atoms are split into atomic piles and break down into various elements that must be removed from the pile. After being separated from uranium and plutonium, the products are mixed together in solution and stored in underground vats.

For some industrial purposes this mixture, partly refined, could be used. But for most applications it probably will be necessary to extract individual elements.

Tool Eliminates Excess Zinc

Centrifugal machine installed by Enterprise Galvanizing Co., Philadelphia, is designed to dispose of excess zinc and leave a smooth coating on finished parts. Machine disposes of the zinc left-over that clogs surfaces of certain items, usually bolt threads and small



Models D-24, D-28 available in 24″ and 28″ swing; 1¾″ capacity; 3 speed options; geared power feeds; four speed geared transmission; 25″ head travel; 11″ spindle feed.

Model C-20 has 20″ swing; 1″ capacity in mild steel; eight spindle speeds from 65 to 1360 R.P.M.; geared power feeds; automatic spindle stop; 2 H.P. motor; tachometer.

Model E-25 features large swing of 25″; variable speed drive for drilling ⅛″ to ¾″; 1½ H.P. motor; tachometer shows exact spindle speed; self-locking speed control.

SIBLEY
MACHINE & FOUNDRY CORP.
DEPARTMENT S-6
SOUTH BEND 23, INDIANA

SIBLEY MACHINE & FOUNDRY CORP.
Dept. S-6, South Bend 23, Indiana
Send Catalog Describing
☐ Model E-25 ☐ Model C-20 ☐ Model D-24
Name _____ Title _____
Company _____
Address _____
City _____ State _____

ANNOUNCING

THE IMPROVED

Exide-Ironclad

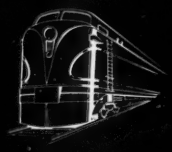
BATTERY

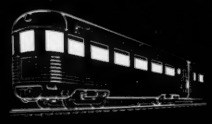
YEAR AFTER YEAR, one Exide-Ironclad improvement has followed another. It is a record of continuing progress . . . a steady flow of storage battery developments that have made Exide-Ironclad YOUR BEST POWER BUY AT ANY PRICE.

NOW COMES ANOTHER Exide-Ironclad advance . . . . . a polyethylene insulating tube sealer. This and other improvements combine to give you more dependable battery performance and longer-than-ever battery life.

Exide-Ironclad BATTERIES

YOUR BEST POWER BUY
. . . AT ANY PRICE

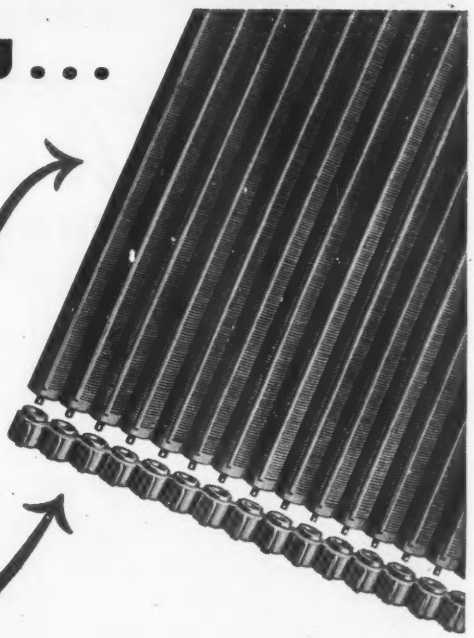




BUILT TO GIVE YOU...

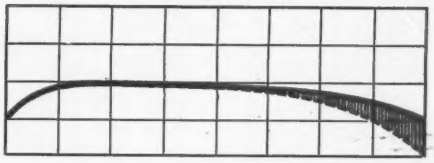
RAPID ACCURATE HANDLING . . . UNIFORM RATE OF HANDLING... HIGH AVAILABILITY... LOW OPERATING COSTS... LOW MAINTENANCE COSTS... LOW DEPRECIATION COSTS... HIGH MANEUVERABILITY... SAFE HANDLING

BECAUSE OF:



IMPROVED POSITIVE PLATE CONSTRUCTION
the long-life grids now contain SILVIUM —an alloy of silver, lead and other components—which make them highly corrosion resistant. Top conducting bar is heavier.

...with the New Polyethylene insulating tube sealer
An insulating sealer for the bottom of the tubes. Acid-proof, non-corroding plastic it fits snugly into slotted tubes of positive plate, and reduces loss of active material. Even the small sediment deposit of the past is reduced 50%. Thus, more active material remains available, and the high battery capacity is sustained for longer working life. (See chart at right.)



PERMANIZED NEGATIVE PLATES
Improved processing, a result of Exide Quality Control assures uniform plates with higher electrical efficiency. These negatives, teamed with the improved positive plates, give you a well-balanced combination for hard service and long life.

NEW SEALING COMPOUND
Through the cooperative efforts of Exide Laboratories and the Franklin Institute, a new homogeneous compound was developed. It makes a permanent seal between the jar and cover, resisting shock without cracking in high or low temperatures.

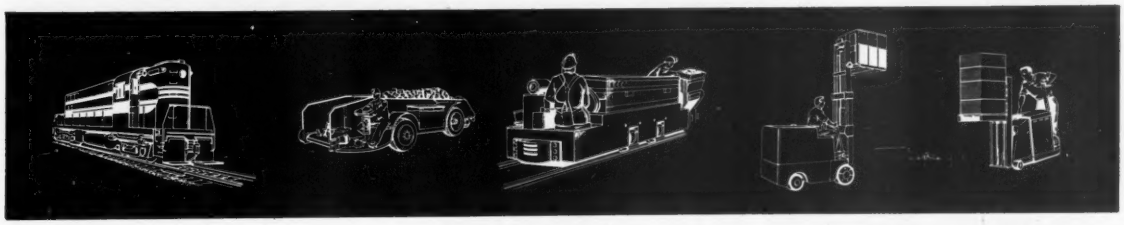
SEAMLESS SHOCK-PROOF JAR
Made of high quality rubber. A scientifically selected combination of tensile strength and elongation provides a sturdy jar built for long life and heavy-duty service.

CORROSION-RESISTANT TRAY GUARD
A plastic acid-resistant steel tray coating with high insulating quality and ability to withstand hard knocks.

NEW UNBREAKABLE PLASTIC VENT PLUGS
Made of unbreakable polyethylene. Can be quickly and easily removed to add water.

Types and sizes for storage battery applications for every heavy-duty service.

Write today for further information.



THE ELECTRIC STORAGE BATTERY COMPANY

Philadelphia 2

Exide Batteries of Canada, Limited, Toronto

"EXIDE-IRONCLAD" and "PERMANIZED" *Reg. Trade-marks U.S. Pat. Off.* "SILVIUM" *T.M. Reg. applied for*

NONE BETTER... America's First and Safest

HERC-ALLOY

SLING CHAINS

STRENGTH—Size for size, no other sling chain offers a greater tensile strength. HERC-ALLOY will not crystallize—never requires annealing.

SAFETY—HERC-ALLOY Sling Chains are made to your specifications. Every new sling carries a written guarantee, is registered and tested before shipping. This registration serial number is carried at the top link.

● Serial number permanently affixed near top link for positive identification.

● Identify HERC-ALLOY by the patented Inswell side weld with the extra swell of metal on the inside of the link.

EFFICIENCY—Lighter, stronger HERC-ALLOY Sling Chains feature the exclusive short, narrow link design which holds firmer, less tendency to kink, less gouging. Workmen handle HERC-ALLOY with less effort.

PREFERENCE—Men who buy and use sling chains are influenced only by facts learned through experience. HERC-ALLOY Sling Chain preference has been built up over the years, not just by what we say, but by how HERC-ALLOY performs on the job.

Write for Data Book No. 3 which contains much useful manufacturing and application information on HERC-ALLOY Sling Chains.

COLUMBUS McKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corp.)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

District Offices: **New York • Chicago • Cleveland**

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., and Johannesburg, South Africa.

openings, forcing a rethreading operation or causing lost time in metal removal. Unit hot dip galvanizes medium-size articles such as bolts, nuts, washers, marine and pole line hardware.

More Power, Less Heat

Enclosed dual-cooled motor with heat exchanger permits smaller units, greater power

BROADENING application of all-electric adjustable speed drive increases the need for a totally-enclosed motor with special cooling provisions in relatively large horsepower ratings. Applications are seen in situations where the motor must be given extra protection from atmospheric conditions.

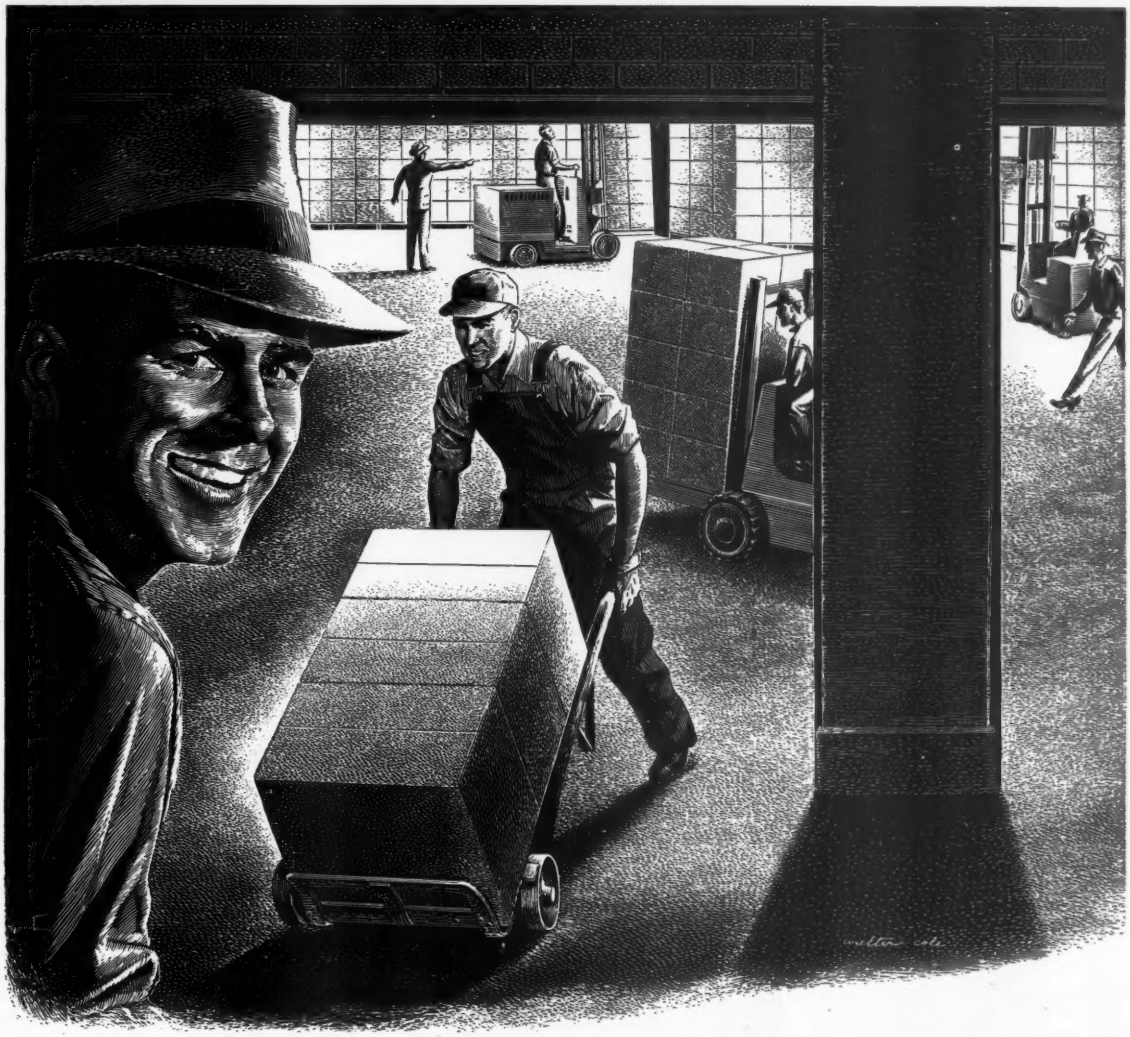
This need becomes more apparent when consideration is given to the wide speed range required of the adjustable-speed units. In this, they differ from conventional direct-current motors. Today, speeds of 200 to 1800-rpm are becoming increasingly common. Ranges as high as 100 to 1 are found useful in many industrial processes.

Clean Air Preferred—In many instances, especially where the drive motor requires protection from bad atmospheric conditions, the unit must be enclosed. This cannot be done successfully without proper cooling within itself, preferably by clean air.

One example of progress in this type of drive is reported by Reliance Electric & Engineering Co., Cleveland. The firm has developed what it terms a totally enclosed, dual-cooled motor, equipped with heat exchanger as an integral part of its own frame. A 1½-hp, 3-phase, 60-cycle motor, built into the exchanger, runs at 3600-rpm to drive internal and external fans independent from the main motor.

Little Cleaning—Heat exchanger sections are cast aluminum. They have both internal and external fins for maximum heat dissipation. Air velocity through the internal sections is 2900-fpm. In the external path between cover and exchanger bank, air is pumped at 3300-rpm.

Company says it anticipates little need for cleaning the outside of the exchanger bank except where the surrounding atmosphere



Gaylord Boxes Assure Faster, Easier Packing and Shipping

You save money in your shipping room when you use Gaylord Boxes. Protection-engineered, Gaylord containers fit your product like a glove... That's why they save time in packing and speed up shipping. Your nearest Gaylord Sales and Service office will be glad to demonstrate the custom features that have won leadership for Gaylord Boxes.

It's the unseen quality that gives you the extra margin of safety in

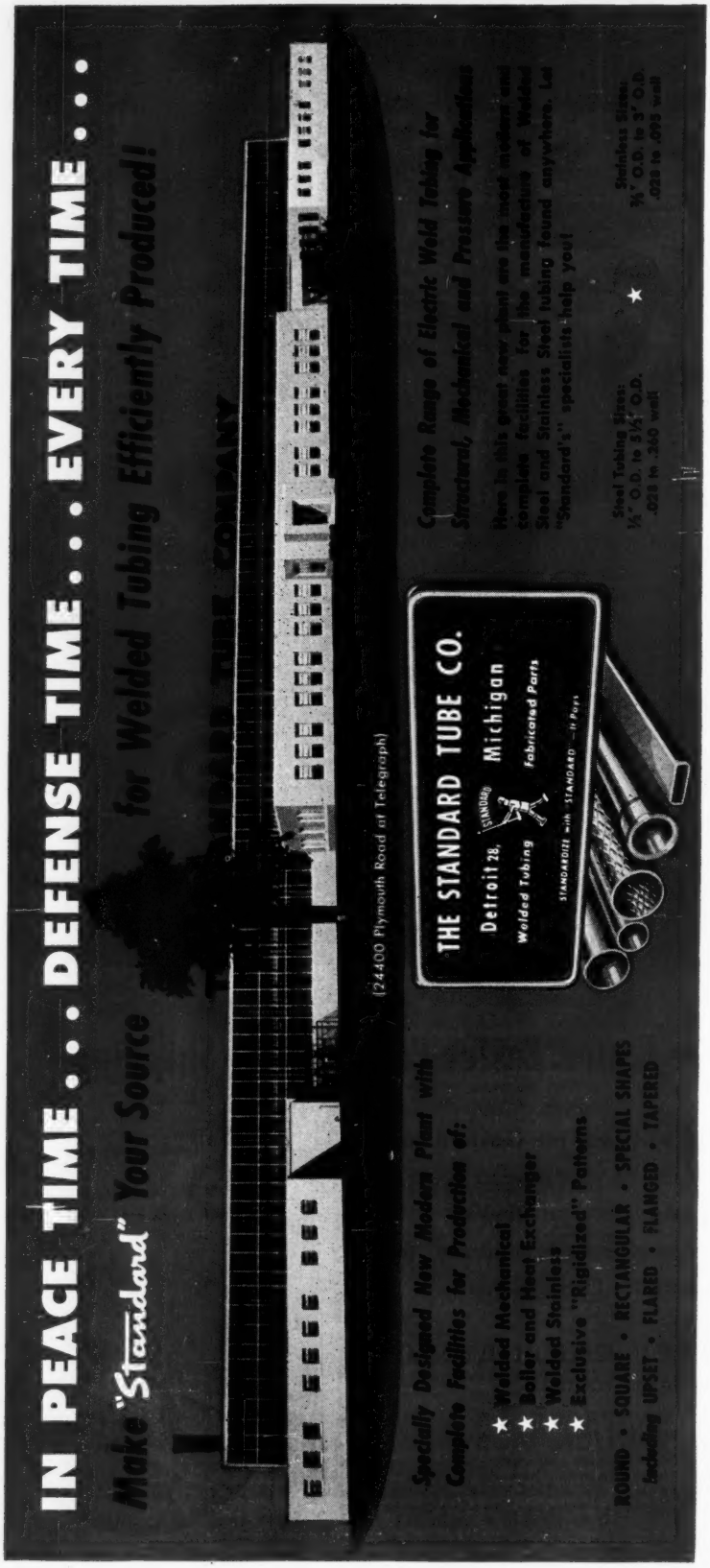
Gaylord Boxes

GAYLORD CONTAINER CORPORATION

General Offices: **SAINT LOUIS**

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Indianapolis • Los Angeles • Seattle • Houston • Oakland Minneapolis • Detroit • Columbus • Fort Worth • Tampa • Dallas • St. Louis • Cincinnati • Des Moines • Oklahoma City • Portland Greenville • San Antonio • Memphis • Kansas City • Bogalusa • Chattanooga • Milwaukee • Weslaco • New Haven • Amarillo Appleton • Hickory • Sumter • Greensboro • Jackson • Miami • Omaha • Mobile • Philadelphia • Little Rock • Charlotte • Cleveland


IN PEACE TIME . . . DEFENSE TIME . . . EVERY TIME . . .
Make "Standard" Your Source for Welded Tubing Efficiently Produced!
(24400 Plymouth Road at Telegraph)
Specially Designed New Modern Plant with Complete Facilities for Production of:
★ Welded Mechanical
★ Boiler and Heat Exchanger
★ Welded Stainless
★ Exclusive "Rigidized" Patterns
ROUND • SQUARE • RECTANGULAR • SPECIAL SHAPES
Including UPSET • FLARED • FLANGED • TAPERED
THE STANDARD TUBE CO.
Detroit 28, Michigan
Welded Tubing
Fabricated Parts
Complete Range of Electric Weld Tubing for Structural, Mechanical and Pressure Applications
Steel Tubing Sizes:
Stainless Sizes:

contains wet clinging dust. Under such conditions cleaning becomes a simple matter of removing exchanger cover and wire brushing the bank.

Double the Limit—New design is also calculated to simplify maintenance. Many previous enclosed ventilated motor designs have employed small tubes or similar devices for dissipating heat. These present a difficult cleaning problem. In the Reliance design, use of the wide exposed aluminum fins, plus high velocity at which air sweeps past, tend to prevent dirt from collecting. If fins do become fouled, they can be cleaned easily by removing the cover to make parts readily accessible.

Another result of the improved cooling is said by the company to be use of smaller motors for a given horsepower. This advantage permits construction of totally enclosed motors up to 150-hp—or double the limit imposed before.

Check Valve Rights Purchased

Henry Flow Control Co., subsidiary of Henry Valve Co., Melrose Park, Ill., has purchased all rights under the Callahan check valve patent. This patent covers a horizontal, nonsticking, disk-type, back pressure check valve for gas liners. Valve has many industrial and laboratory uses as a safety check valve for premixed gas and air.

Valve permits unrestricted gas flow at negligible pressure drop with the lightweight disk in full open position at pressures as low as 1-inch water column. It features spring-tension push rod that holds its aluminum disk slightly off the valve seat except in case of reverse flow.

Tool Manual Covers Automatics

Comprehensive machine tool instruction manual published by Warner & Swasey Co., Cleveland, covers operation of the company's five-spindle automatics, both bar and chucking machines. The 234-page volume analyzes subjects under the general headings of machine construction, installation, attachments, tooling and operation. Photographs, diagrams, charts and tables are employed to illustrate text material.

Knife Adjustment...

Easy and Convenient on STEELWELD SHEARS

The clearance between knives can be set quickly and accurately for their entire length by one man working at front.

When the knives on a Steelweld Shear are being set parallel from one end to the other, it is not necessary to have one man at the rear of the machine turning adjustment bolts, with another man at the front gauging the knife clearance. Nor is it necessary to work between or behind the hold-downs in hard-to-reach places.

On Steelwelds the hold-down beam can be lifted out of the way and all knife adjustment bolts reached from the front of the machine. As each bolt is turned, the clearance can be checked at once. One man can make the entire adjustment in a small fraction of the time usually required.

After the knives have been set for parallel, the clearance between them can be adjusted to suit various plate thicknesses to obtain the best possible cuts. This can be done in a few seconds by turning a crank and watching a dial indicator.

Because knife adjustments have been made so convenient on Steelwelds, shear operators will make them gladly and without hesitation. This contributes greatly to accuracy and quality of cuts and assures long knife life.

GET THIS BOOK!

CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

7838 East 282nd St. Wickliffe, Ohio.

STEELWELD PIVOTED BLADE SHEARS

SHENANGO *Centrifugal* CASTINGS ... KEY TO SAVINGS

FROM TINY LINERS TO HUGE ROLLS

double assurance OF LONGER LIFE!

FOR close-knit strength and added life, here's a combination you just can't beat—Shenango *centrifugally* cast parts of Meehanite Metal. It is *double* assurance of finer, more uniform, pressure-dense metal, plus freedom from blow holes, sand inclusions and other defects!

So check with Shenango on your need for symmetrical or annular parts—semi-finished if you wish, or machined to your precise specifications in the modern Shenango shops. Get *all* the facts. Like others you'll probably find you can save time, money and trouble.

SHENANGO-PENN MOLD COMPANY
Centrifugal Castings Division
Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL

CALENDAR
OF MEETINGS

June 9-21, International Organization for Standardization: Triennial meeting, Columbia University, New York. Secretary-general: Henri St. Leger, Geneva, Switzerland. Host association: American Standards Association, 70 E. 45th St., New York 17. Secretary: George F. Hussey Jr.

June 13, The Wire Association: Regional meeting, Hotel Biltmore, Los Angeles. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

June 15-18, National Association of Cost Accountants: Annual international cost conference, Waldorf-Astoria Hotel, New York. Association address: 505 Park Ave., New York 22. Secretary: A. B. Gunnarson.

June 15-19, American Society of Mechanical Engineers: Semi-annual meeting, Sheraton-Gibson Hotel, Cincinnati. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

June 16-17, Malleable Founders Society: Annual meeting, The Homestead, Hot Springs, Va. Society address: 1800 Union Commerce Bldg., Cleveland. Secretary: Lowell D. Ryan.

June 16-20, American Electropaters Society: Annual meeting and industrial finishing exposition, Hotel Conrad Hilton and International Amphitheatre, Chicago. Society address: Box 168, Jenkintown, Pa. Secretary: D. Gardner Foulke.

June 19-20, American Management Association: General management conference, Waldorf-Astoria Hotel, New York. Association address: 330 W. 42nd St., New York.

June 19-21, American Society of Mechanical Engineers: Applied Mechanics Division conference, Pennsylvania State College, State College, Pa.

June 22-24, Alloy Casting Institute: Annual meeting, The Homestead, Hot Springs, Va. Institute address: 32 Third Ave., Mineola, N. Y. Secretary: E. A. Schoefer.

June 23-26, Radio-Television Manufacturers Association: Annual convention, Palmer House, Chicago. Association address: 777 14th St. NW, Washington 5. Secretary: James D. Secrest.

June 23-27, American Institute of Electrical Engineers: Summer general meeting, Hotel Nicollet, Minneapolis. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

June 23-27, American Society for Testing Materials: 50th anniversary meeting and exhibit, Hotels Statler and New Yorker, New York. Society address: 1916 Race St., Philadelphia. Secretary: C. L. Warwick.

June 23-27, American Society of Mechanical Engineers: Oil & Gas Power Division conference, Hotel Statler, Buffalo, N. Y.

June 26-28, American Society of Mechanical Engineers: Western meeting, Applied Mechanics Division, University of California, Los Angeles. Information director: J. C. Dillon, Engineering Extension, University of California.

June 29-July 2, National Industrial Advertisers Association: Annual meeting, Palmer House, Chicago. Association address: 1776 Broadway, New York. Executive secretary: Blaine G. Wiley.

Motor Applications Charted

Westinghouse Electric Corp. has prepared more than 100 case histories demonstrating applications of its Life-Line motors. Most of the histories are illustrated; each gives the particular job problems involved, motor choice for the work and the results achieved. Material is presented in 35-page booklet.

BUTTERING WAS THE ANSWER!

Saved costly casting . . .

allowed use of low cost rods

Need for complete re-making of a large, costly composite machine frame threatened a prominent Western mining equipment builder. Weld metal was picking up harmful impurities from the cast part—it was impossible to obtain satisfactory welds using the electrodes specified.

The local M&T salesman joined with company welding engineers . . . experimented . . . and sparked a solution! On his advice surfaces of the casting where welding was required were simply "buttered" with Murex Type HTS before the bulk of the weld metal was deposited.

Results were: complete elimination of pickup so that remaking of the casting to new metallurgical specifications became unnecessary. And, the specified electrodes, on hand for the job, could be used.

Your nearby M&T representative is qualified to give you expert assistance on any welding problem. Call on him when you need help. Make use of his broad background of experience in every phase of welding.

MUREX®

Electrodes

Arc Welders • Accessories

METAL & THERMIT CORPORATION 100 East 42nd Street, New York 17, N. Y.

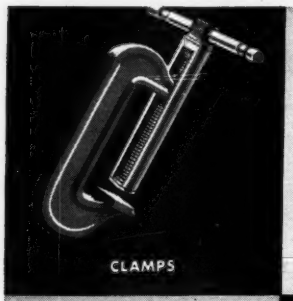
Need tools or machinery?

"One call gets them all!"

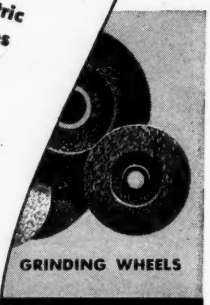
● It's faster and more convenient to use U.S. Steel Supply's "one call" service when you want tools and machinery for your plant maintenance or production needs. We have available a wide variety of top quality equipment that will meet your most exacting requirements. One call to your nearest U.S. Steel Supply office will bring quick delivery of most items in our diversified stock. One call gets them all!

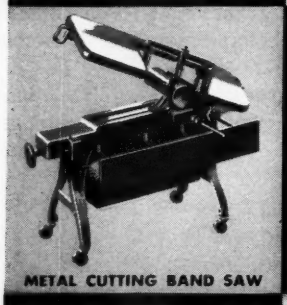
WRITE FOR FREE BOOK! You'll find plenty of helpful information in *Your Complete Guide to Metal Working Machinery and Industrial Tools.*

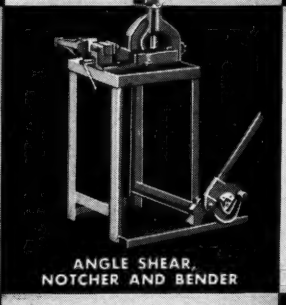
- Beading Machines
- Benders, Bar and Angle
- Brakes, Hand or Power
- "C" Clamps
- Crimpers
- Drill, Portable Electric
- Elbow Machines
- Expanded Metal
- Flanging Machines
- Galv-Weld
- Grinders, Portable Electric
- Grinding Wheels
- Hoists, Hand or Electric
- Lock Forming Machines
- Marking Crayons
- Notchers
- Punches, Hand or Power
- Punch Presses
- Rolls, Slip, Hand or Power
- Saws, Metal Cutting
- Shears, All Types
- Welding Electrodes
- Welding Machines

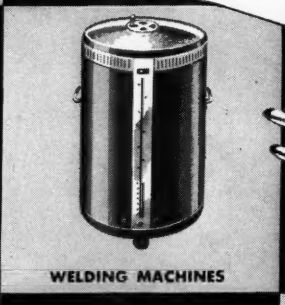

CLAMPS

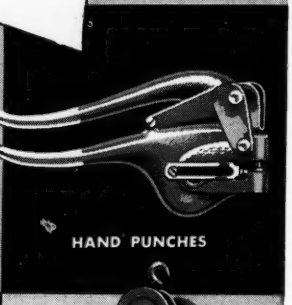
PORTABLE ELECTRIC SHEAR

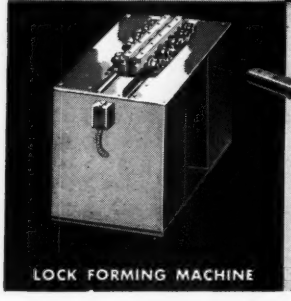

GRINDING WHEELS

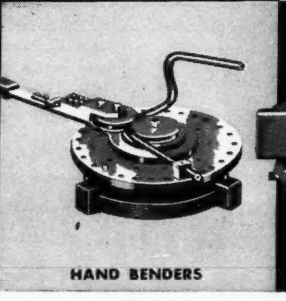

METAL CUTTING BAND SAW

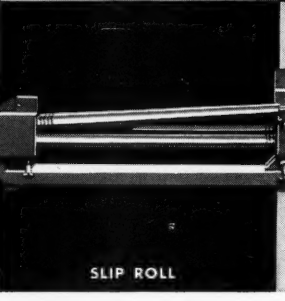

ANGLE SHEAR, NOTCHER AND BENDER


WELDING MACHINES


HAND PUNCHES


LOCK FORMING MACHINE


HAND BENDERS


SLIP ROLL

HAND HOIST

UNITED STATES STEEL SUPPLY DIVISION

UNITED STATES STEEL COMPANY

HEADQUARTERS: 208 So. LA SALLE ST., CHICAGO 4, ILL. WAREHOUSES COAST-TO-COAST

Warehouses and Sales Offices: BALTIMORE · BOSTON · CHICAGO · CLEVELAND · LOS ANGELES · MILWAUKEE · MOLINE, ILL. NEWARK · PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · TWIN CITY (ST. PAUL) · SAN FRANCISCO · SEATTLE

Sales Offices: INDIANAPOLIS · KANSAS CITY, MO. · PHILADELPHIA · PHOENIX · ROCKFORD, ILL. · SALT LAKE CITY · SOUTH BEND · TOLEDO TULSA · YOUNGSTOWN

USS

UNITED STATES STEEL

New Products and Equipment

FINISH SIZING IRREGULAR AIRFOIL PARTS
. . . grinds entire section in single automatic cycle

EFFECTING ECONOMIES IN TURNING THROUGH SIMPLE, BASIC DESIGN
. . . reduces handling; eliminates expensive form tools and multi-tool blocks

Automatic Grinding Machine

USE REPLY CARD—CIRCLE No. 1

Automatic grinder for finish sizing irregular and twisted airfoil sections of jet engine compressor blades and turbine buckets is introduced by Pratt & Whitney Division, Niles-Bement-Pond Co., W. Hartford 1, Conn. Machine grinds in a single automatic cycle the complete airfoil section including leading and trailing edges and the area close to angular roots or shrouds. One operator tends a battery of machines, unloading finished blade and loading a forged or fabricated blade blank to restart the cycle.

Tool operates on the duplicating principle, copying from an airfoil master. Stock is removed from the work by a high-speed coated abrasive belt, running over a grinding contact wheel. Rate of rotation is varied automatically during each rotation to cause blade's leading and trailing edges to pass the grinding contact faster than the concave and convex surfaces. Machine is composed of the main frame, with pivoting work frame at the top suspended from a traversing carriage. A center horizontal beam carries a fixed master follower roll and the grinding belt unit.

Press Handles Horning Work

USE REPLY CARD—CIRCLE No. 2

Honing press, developed by Leslie Welding Co., 2943 W. Carroll Ave., Chicago, Ill., combines positive alignment with 5¼-inch die space, 12-ton capacity and a narrow bed. It permits honing or flange matching operations on work pieces or assemblies after forming or assembly. Punch and die alignment accurate to 0.0001-inch is attributed to the press.

This accuracy is maintained by the aligning leaf assembly. Punch is fastened to one end of the latter; the other end is attached to the press frame by a flat spring that serves as a pivot when punch is raised and lowered. Because of leaf assembly's rigidity, except at its flexing point, and crankshaft construction it is unnecessary to center the load on punch plate.

REPLY CARDS

on page 151 will bring you more information on any new products and equipment in this section.

Model GF Copying Lathe

USE REPLY CARD—CIRCLE No. 3

New Britain Machine Co., New Britain, Conn., offers its model GF copying lathe. Company states economies can be effected in turning from four principal factors: Operating simplicity; low setup—changeover time; reduced handling—checking time; and elimination of expensive form tools and multi-tool blocks.

No conventional flat-bed interferes with chip flow. Chips are removed through the machine's rear without interrupting production. Location of template on the front facilitates changeover or adjustment. Entire hydraulic system—of extremely simple design—is enclosed in the carriage.

Tracer contact pressure against the template is sufficiently light to permit use of templates cut from thin, unhardened steel.

Automatic Polishing Machine

USE REPLY CARD—CIRCLE No. 4

Continuous rotary automatic polishing and buffing machine, the model C-46-40, is a development of Hammond Machinery Builders Inc., Kalamazoo, Mich. The tool is designed to effect economies through reduced manufacturing and mate-

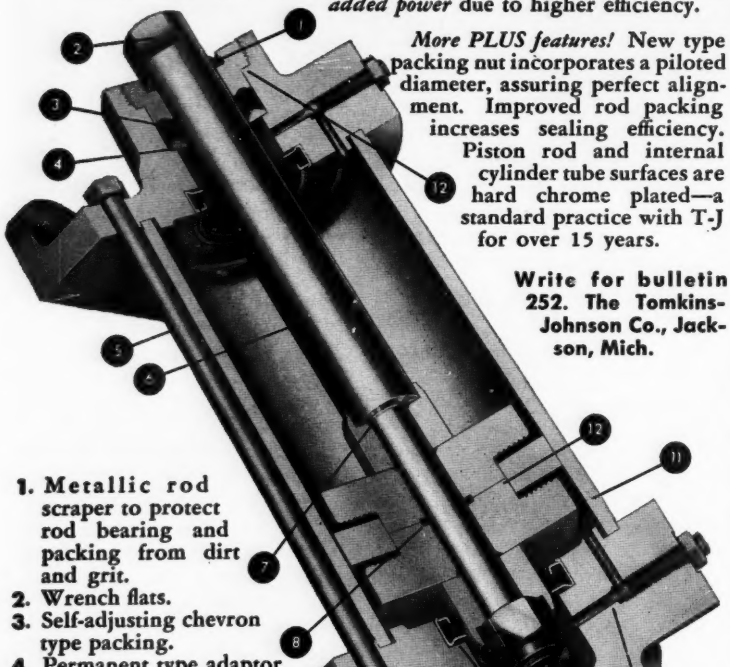
New Flexible Sealing...

T-J AIR CYLINDER

Designed with revolutionary application of

Super-Cushion

It's *sealed with pressure*—a revolutionary T-J application of flexible sealing that insures positive cushion action combined with automatic valving action for fast return stroke . . . eliminates binding and sticking . . . operates with *low friction, minimum wear,* and *added power* due to higher efficiency.



More PLUS features! New type packing nut incorporates a piloted diameter, assuring perfect alignment. Improved rod packing increases sealing efficiency. Piston rod and internal cylinder tube surfaces are hard chrome plated—a standard practice with T-J for over 15 years.

Write for bulletin 252. The Tomkins-Johnson Co., Jackson, Mich.

1. Metallic rod scraper to protect rod bearing and packing from dirt and grit.
2. Wrench flats.
3. Self-adjusting chevron type packing.
4. Permanent type adaptor ring.
5. Hi-tensile tie rods.
6. Heavy duty, hard chrome plated rod.
7. Generous fillet reduces stress concentration.
8. "O" ring static seal.
9. T-J new flexible cushion seal insures positive cushion with automatic valve action for fast return stroke. (Patent applied for)
10. Fine cushion adjustment.
11. Heavy wall precision honed hard chrome plate.
12. Controlled packing compression with metal to metal contact.

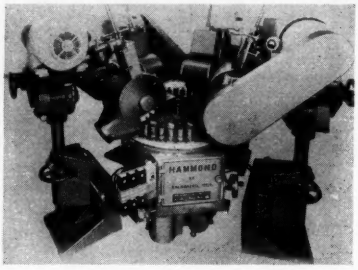
36 YEARS' EXPERIENCE (T-J)

TOMKINS-JOHNSON

RIVITORS . . AIR AND HYDRAULIC CYLINDERS . . CUTTERS . . CLINCHORS

rials handling costs, as well as conserve floor space. It finishes parts from 1/16-inch to 12 inches diameter. Basic machine has a 46-inch diameter table. Fixtures revolve as they pass the buffing wheels, presenting all outer, top and side surfaces to the belt or wheel for finishing. To ease loading and unloading the workpiece, fixtures do not revolve at operator's station.

Basic machine is standardized, but special workholding fixtures are required. Installation depends on nature of the work to be finished, type of finish and volume desired, making each fixture a custom job.



. . . to reduce manufacturing, handling cost

Rotating work spindle speed is variable, with a 3:1 range. Separate motor drive is independent of table rotating drive. Table rotating speed is also variable, with a 3:1 range. It provides production of 1000-3000 parts per hour, depending on dwell time required. Unit is also available with flat top table for work not required to rotate under the wheel.

After Cooler Design Improved

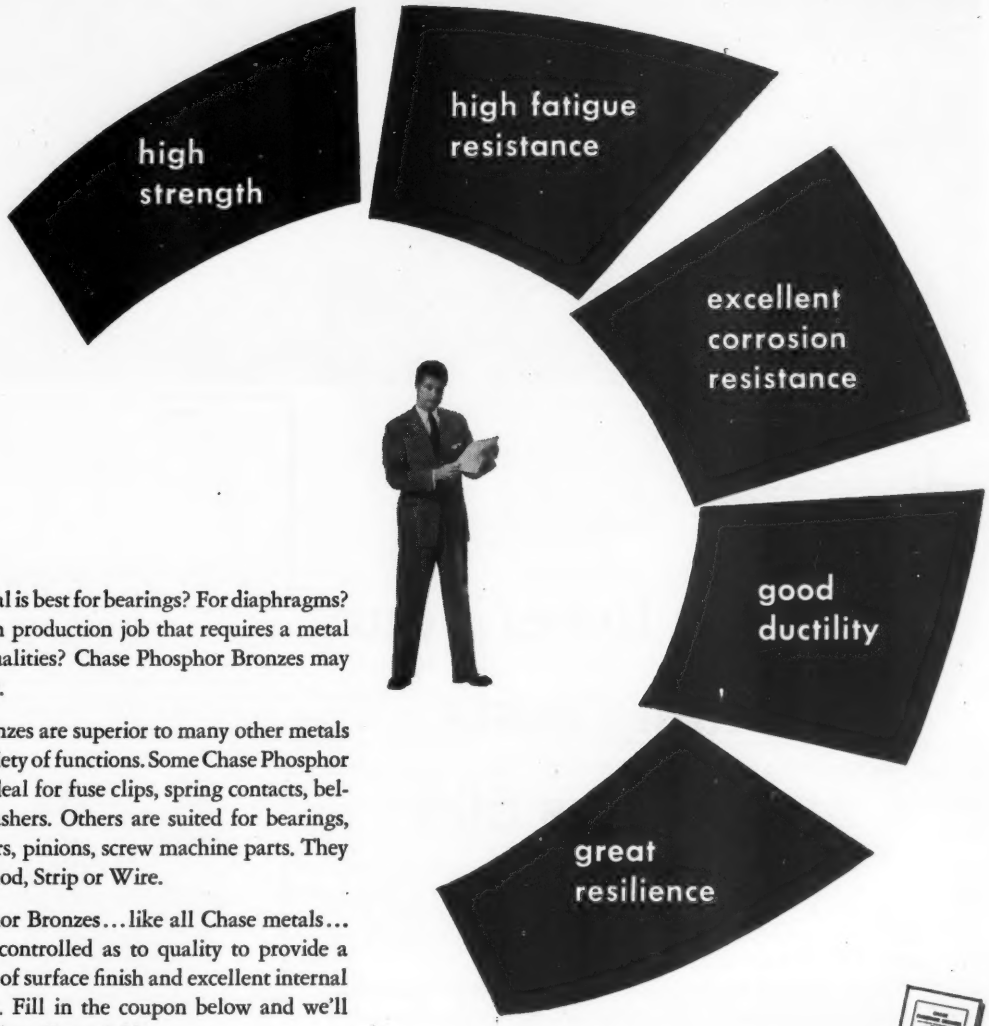
USE REPLY CARD—CIRCLE No. 5

Niagara Blower Co., 405 Lexington Ave., New York 17, N. Y., announces an improved design of its Aero after cooler for compressed air or gases. Cooling capacity is reported increased 25 to 75 per cent over previous models. Cooling is done by evaporation of recirculating water sprays on the surface of tubes through which compressed air passes. Model's increased capacity is gained through improved distribution of compressed air in machine and increase in the amount of evaporating surface.

Tube sizes are increased to increase friction. Equipment is de-

CHASE® PHOSPHOR BRONZES

are worth knowing about



WHAT metal is best for bearings? For diaphragms? For *any* tough production job that requires a metal of superior qualities? Chase Phosphor Bronzes may be the answer.

These tin bronzes are superior to many other metals for a wide variety of functions. Some Chase Phosphor Bronzes are ideal for fuse clips, spring contacts, bellows, lock washers. Others are suited for bearings, bushings, gears, pinions, screw machine parts. They are made in Rod, Strip or Wire.

Chase Phosphor Bronzes... like all Chase metals... are carefully controlled as to quality to provide a high standard of surface finish and excellent internal characteristics. Fill in the coupon below and we'll send you the free Chase folder.

FREE Folder gives tables of Chase Phosphor Bronze properties (hardness, tensile, fabrication, physical) as well as uses and forms.

Chase® **BRASS & COPPER**

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

• *The Nation's Headquarters for Brass & Copper*

Albany†	Cleveland	Kansas City, Mo.	New York	San Francisco
Atlanta	Dallas	Los Angeles	Philadelphia	Seattle
Baltimore	Denver†	Milwaukee	Pittsburgh	Waterbury
Boston	Detroit	Minneapolis	Providence	
Chicago	Houston†	Newark	Rochester†	(†sales offices only)
Cincinnati	Indianapolis	New Orleans	St. Louis	

Chase Brass & Copper Co., Dept. ST652
Waterbury 20, Conn.
Please send me the free folder on Chase Phosphor Bronzes.

Name_____

Position_____

Company_____

Street_____

City_____ State_____

WORTHINGTON TURNING ROLLS IN OPERATION move this big tank at exactly the right speed for the most efficient downhand welding. This equipment often increases output as much as 50% because downhand welding with heavier electrodes does the job with one pass instead of two or three.

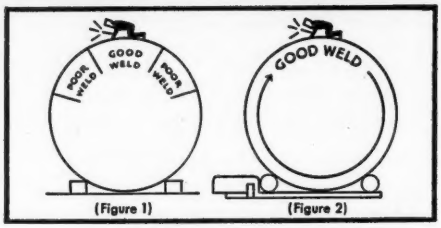
A way to lower your welding costs as much as 50%

If you are welding cylindrical vessels of any size, you can lower costs and increase welding footage as much as 50% with Worthington Turning Rolls.

Your welders can produce more *real footage* by eliminating time wasted in manually turning the vessel or waiting for crane or hoist service.

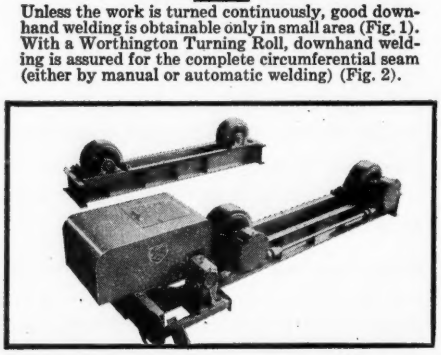
You'll get neater, stronger welds and less rod waste, too. The Worthington Turning Roll power turns the vessel at selected welding speeds for quickest spotting of longitudinal seams and continuous welding of circumferential seams. All welds can be made by the convenient downhand method with the economies that result from larger electrodes used.

Where can you see a Worthington Turning Roll at work near you? Just write Worthington Corporation, formerly Worthington Pump and Machinery Corporation, Plainfield, N. J., for this information or for Bulletin 210C.



WHY WORTHINGTON TURNING ROLLS INSURE BETTER WELDS

Unless the work is turned continuously, good downhand welding is obtainable only in small area (Fig. 1). With a Worthington Turning Roll, downhand welding is assured for the complete circumferential seam (either by manual or automatic welding) (Fig. 2).



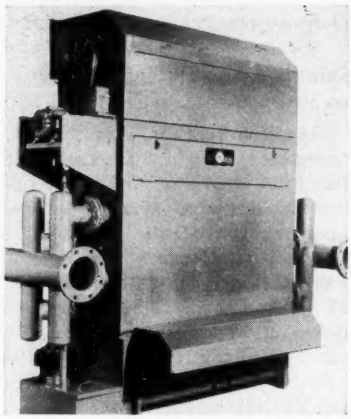
WORTHINGTON'S LOW-SLUNG DRIVE MECHANISM permits unobstructed loading from either end of turning rolls. The high-efficiency and smooth operation of Worthington power rolls (lower right) and idler rolls (upper left) result from long and varied experience in building equipment for welding cylindrical vessels.

Y.1.3

WORTHINGTON

Welding Positioners
Turning Rolls

signed for outdoor installation to provide cleaner compressed air and save building space. To prevent freezing in the winter, an automatic control shuts off cold air from the spray chamber. Cooling



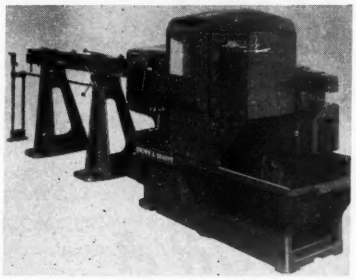
. . . ups cooling capacity 25-75 per cent

medium is air at the atmospheric wet bulb temperature. Compressed air is always cooled below atmospheric dry bulb temperature to prevent condensation in compressed air lines.

Automatic Screw Machine

USE REPLY CARD—CIRCLE No. 6

Production of medium-size work requiring close tolerances combined with good finish is the function of the No. 4 automatic screw machine developed by Brown & Sharpe Mfg. Co., Providence 1, R. I. Spindle has positive chain

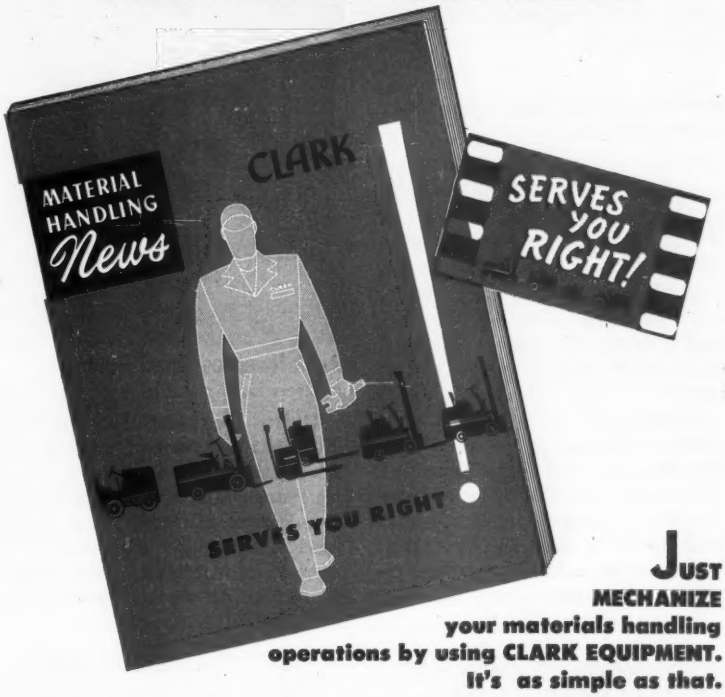


. . . for medium work at close tolerances

drive at all speeds. It is provided with 168 two-speed combinations that include a wide range of high-to-low speed ratios. Equal cutting efficiency is obtained on all materials including tough alloy steels.

Speeds and the full antifriction-bearing spindle are changed quickly by simple pick-off gears. A

HOW TO GET THE MOST FOR YOUR MONEY!



JUST MECHANIZE your materials handling operations by using CLARK EQUIPMENT. It's as simple as that.

● That's what they all say? Perhaps. But CLARK backs up *its* claim with facts and unmatched performance.

On the questions of . . .	√ Number of Trucks in Use
√ Quality, Longevity	√ Efficiency and Performance
√ Savings Achieved	√ Economy of Operation and Maintenance
√ Customer Satisfaction	√ Factory and On-The-Ground Service

. . . there is at hand—and available to you—overwhelming evidence that CLARK Serves You Right!

The whys and wherefores are available to you in two new media—the "SERVES YOU RIGHT" edition of our Material Handling News, and our new movie on the use of fork-lift trucks and industrial towing tractors in Plant Maintenance Work.

Each of these items is free to you—the 15-minute sound movie, black-and-white, on a loan basis. They'll tell you and show you how CLARK enables you to get the *MOST* for your money. Just fill out the coupon, attach to your business letterhead and place in your "outgoing" mail basket.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS
AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 26 MICHIGAN

Please send: ☐ Material Handling News ☐ Movie "Serves You Right" ☐ Have Representative Call.

Name_____

Firm Name_____

Address_____

City_____ Zone_____ State_____

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

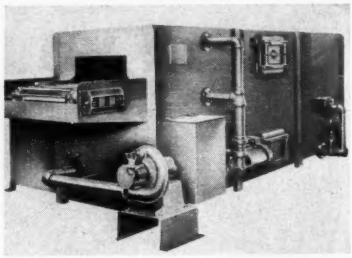
wide range of production rates ranges from 12 seconds through 13 minutes per piece. Compact driving mechanism is completely enclosed and automatically lubricated. A trip-dog controlled accelerating mechanism for the camshaft reduces nonproductive time on several jobs.

Machine Cleans Foundry Flasks

USE REPLY CARD—CIRCLE No. 7

Special washing machine engineered for removing sand mechanically from steel foundry flasks is announced by Alvey-Ferguson Co., Cincinnati 9, O. The unit does a complete cleaning job—an important factor for close fitting when reassembling the parts. Cleaner employs the company's super-spray system.

Flasks pass along a bar type conveyor through consecutive high-pressure, fan-shaped curtains of cleaning solution directed from all sides. Design includes a special feature called the Slo-Flo tank. This unit causes the cleaning solution, as it recirculates through the machine, to flow slowly through the tank, permitting sand to settle before it reaches the screen tank. In this way, foreign particles are removed that could clog the spray nozzles.



. . . designed to remove sand mechanically

Rack Handles Small Parts

USE REPLY CARD—CIRCLE No. 8

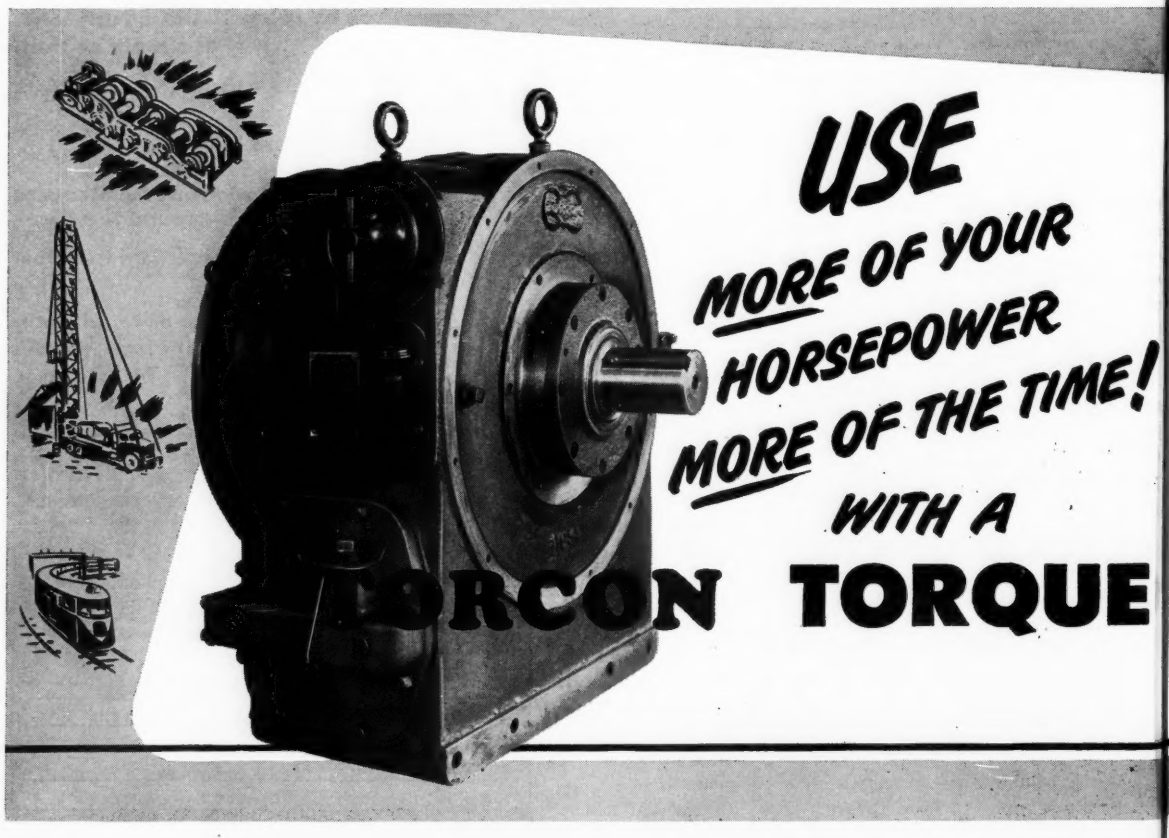
Utility rack, designed for handling parts or small items in production or assembly, is announced by Palmer-Shile Co., 16025 Fullerton, Detroit 27, Mich. Rack can be used at a machine or employed for conveying materials from station to station. All steel, of welded construction, the unit has two swivel casters and two rigid. Rack is 24 inches wide, 50 inches high and 48 inches long overall; clearance between shelves, 12 inches. It weighs about 200 pounds. Special designs can be supplied to fit individual plant or product requirements.

Spindle Assembly Redesigned

USE REPLY CARD—CIRCLE No. 9

Hamilton Tool Co., Hamilton, O., announces change in the design of its No. 1 gear hobber spindle assembly. Redesign permits 180-degree rotation of the hob spindle turntable and reverse rotation of hob spindle itself without change of work spindle rotation or feed direction. In addition, machine now can use both straight and tapered hole hobs, tapered either right to left or left to right.

Work and hob spindles can be reversed independently of each other and feed direction can be changed without reference to either. Thus, conventional and climb hobbing with straight or tapered hole hobs, is possible from either direction. Spindle assembly



change extends the machine's feature of independent selection of feed, speed and indexing, increasing flexibility. Hobbers already in use can be changed over to employ the design outlined above.

Machine Gages 34 Dimensions

USE REPLY CARD—CIRCLE No. 10

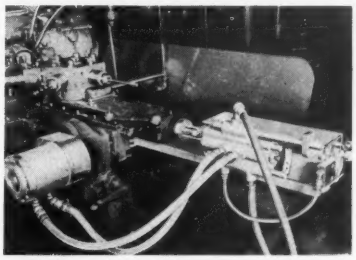
Machine for multiple gaging of critical dimensions on automotive crankshafts is announced by Sheffield Corp., Dayton 1, O. Gaging unit effects 100 per cent inspection, making it possible to read simultaneously 34 or more dimensions on a float graph, formed by float position in the model's columns. Part is revolved on rolls to gage concentricity and runouts. Hand type airsnap is used to gage crankpins for diameter and taper in three places simultaneously on the journal.

All gaging anvil surfaces are tungsten carbide inserted for long wear life. In addition to its speed, the machine eliminates necessity for remembering figures and avoids use of multiple dial faces that require divided attention. Loading and unloading is done hydraulically through a cradle actuated by hand lever.

Hand Turret Lathe Mechanized

USE REPLY CARD—CIRCLE No. 11

Hydraulic drive made for powering ram-type turret lathes is announced by Viking Industries,



. . . hydraulic drive attachment powers work

Rockford, Ill. Attachment is designed for turret lathes with station turrets and is adaptable to machines with bar stock capacity to 2½-inches. Fluid motor attaches to the turret pilot-wheel shaft. Control body is compact and small in size, mounting on the end of the turret. Complete unit consists of the ¾-hp motor, two pumps, a reservoir, fluid motor, control valves and connections.

Automatic individual cycles and feed rates can be set quickly to suit different operations in six or fewer number of turret positions. Individual circuit control rods and adjustable dogs provide means for controlling rate and length of feed. Individual cycles for each of the six positions can be set for rapid approach, dwell, infinite adjustable feed and quick return.

Automatic Burnishing Tool

USE REPLY CARD—CIRCLE No. 12

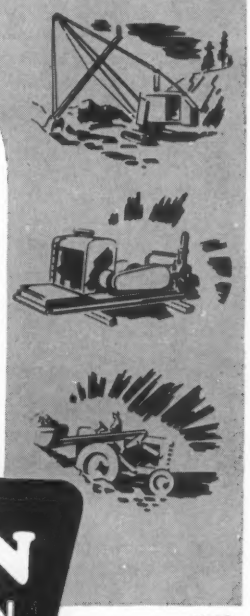
Tool made for flaring soft copper, steel, aluminum and brass tubing, automatically burnishing the face of the flare after it is formed, is announced by Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill. Automatic burnishing action is provided through use of a lost motion mechanism in the yoke that disengages feed during the first revolution when backing off the cone. This causes cone to burnish the flare, giving it a highly

Operators of shovels . . . draglines . . . cranes . . . rail cars . . . lift trucks . . . road machinery . . . tractors . . . mining machinery . . . logging equipment . . . oil well rigs are discovering the advantages of **TORCON TORQUE CONVERTERS.** This automatic hydraulic transmission features variable speed and torque ratios, and facilitates the full utilization of your power source throughout the entire range of operation.

TORCON CONVERTERS are available for applications involving horsepowers from 30 to 600. They can be furnished with and without cut-off clutches.

TORCON units assure *maximum utilization of horsepower,* provide for *more production at less cost, eliminate shock to powered equipment, reduce operator fatigue* and *increase* the *service life* of your machinery.

Write today for complete engineering details.



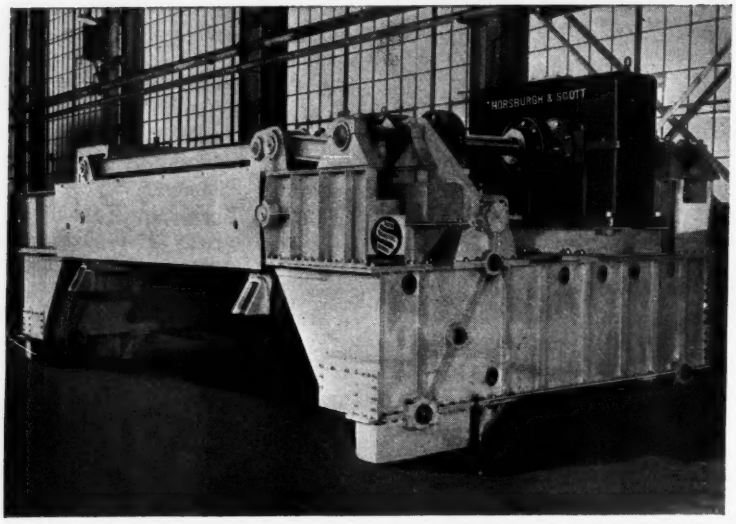
CONVERTER

TORCON CORPORATION
1188 FIFTH STREET
ASHTABULA, OHIO

USE MORE OF YOUR HORSEPOWER MORE OF THE TIME

635-TC

Giving a lift to 56,000 pounds of



soaking pit cover through . . .

H&S REDUCERS

● The above photograph shows a soaking pit cover crane designed and built by Salem Engineering Company. Two Horsburgh & Scott Helical Speed Reducers are used on each crane...the lift drive handles a cover weighing about 28 tons and operates at a speed of 6′ per minute... the traverse drive moves the crane at a speed of 88′ per minute. Many of these cranes have been operating very satisfactorily for twelve to fifteen years... actual tribute to complete engineering design.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U. S. A.

Send note on Company Letterhead for Speed Reducer Catalog 46

polished finish. Hard steel cone is a multi-faced type, with tool chrome finish.

Tool differs from conventional flaring tools by forming its flare in the air above the bar instead of against a bevel. This helps maintain original wall thickness of tubing and is designed to result in stronger flares. Bar is of the sliding segment type with a single screw at the end, obtaining leverage from a rod handle.

Punch and Die Holder Improved

USE REPLY CARD—CIRCLE No. 13

Introduction of an improved holder for use with changeable punches and dies on sheet metal fabricators is announced by Wales-Strippit Corp., N. Tonawanda, N. Y. Holder fits into the bed channel and does not have to be removed when punches on the dies are changed. Rapid setups and consequently faster output result. Unit is a machined aluminum casting for lighter weight and easier handling. T-section design of the holder arm provides torsional strength in all directions. Steel bushing in the punch guide hole accurately guides and assures long life of the punches and dies. Holder automatically aligns punches and dies.

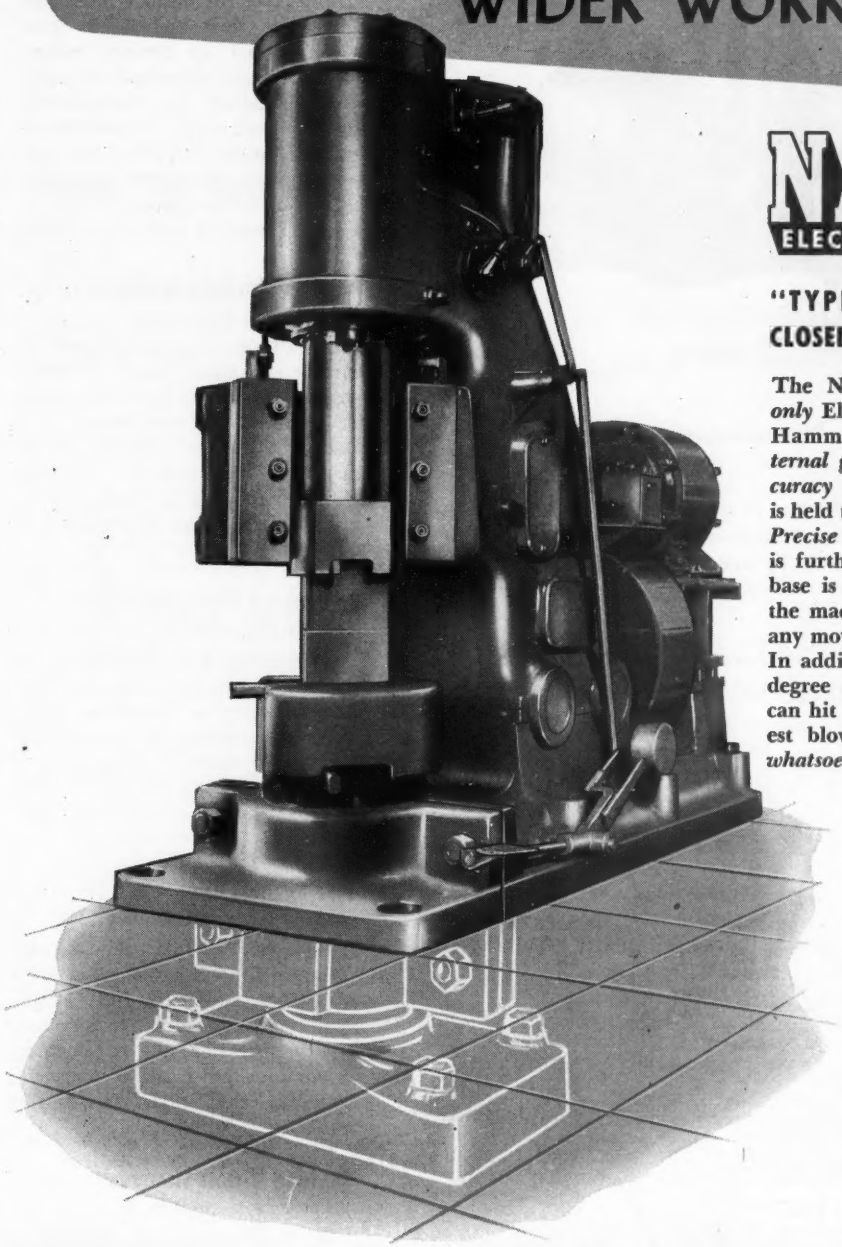
. . . results in faster interchangeability

Brazing Alloy in Paste Form

USE REPLY CARD—CIRCLE No. 14

Phos-Copper, a free-flowing brazing alloy with a low melting point for brazing operations on copper and copper alloys is available in paste form from Westing-

Extreme Accuracy—
WIDER WORK RANGE



NAZEL
ELECTRO-PNEUMATIC

"TYPE I" HAMMER FOR CLOSED or OPEN DIE WORK

The NAZEL "Type I" is the *only* Electro-Pneumatic Forging Hammer with adjustable *external guides . . . increased accuracy* is assured since the ram is held tight within these guides. *Precise alignment at all times* is further assured, because the base is machined to *exactly fit* the machined anvil, preventing any movement of the lower die. In addition, due to the minute degree of control, the NAZEL can hit the hardest or the lightest blow *with no adjustments whatsoever.*

FREE—Write for your copy of our helpful Forging Hammers Bulletin, today!

1836 **LOBDELL UNITED COMPANY** 1952
WILMINGTON 99, DELAWARE
A SUBSIDIARY OF UNITED ENGINEERING AND FOUNDRY COMPANY

There is no way under the sun to do small, precision tapping with "production" speed, satisfactory tap life and acceptable accuracy, *other than to use a tool designed for the specific purpose.*

THE *Hamilton* SUPER-SENSITIVE SMALL HOLE TAPPING MACHINE *IS SUCH A TOOL!*

The complete story of this machine is told in our Bulletin T-471.

IT'S FREE. ASK FOR IT!

THE *Hamilton* TOOL COMPANY
848 SO. NINTH STREET • HAMILTON • OHIO • U • S • A

house Electric Corp., Pittsburgh 30, Pa. Its fluidity and wetting properties provide good capillary action that enables it to penetrate tight-fitting joints instantly to form a strong ductile bond.

Measures, Controls Flow

USE REPLY CARD—CIRCLE No. 15

A receiver for measurement and control of flow and liquid level is introduced by Brown Instruments Division, Minneapolis-Honeywell Regulator Co., Philadelphia 44, Pa. Unit makes it possible to indicate, record, integrate and control flow and liquid level. Data can be retransmitted pneumatically to a second receiver remotely located.

Inserted Carbide End Mills

USE REPLY CARD—CIRCLE No. 16

Serratip small diameter inserted carbide end mills ranging in diameter from 1 to 2½ inches are available from Goddard & Goddard Co., Detroit 23, Mich. Blade adjustment makes possible accurate maintenance of size, maximum use of carbide life and maintenance of chip space.

Laminated Fiberglass Tank

USE REPLY CARD—CIRCLE No. 17

MacDermid Inc., Waterbury 20, Conn., introduces a line of laminated fiberglass finishing tanks. They are resistant to chemical attack inside as well as outside and are nonconductive. They will withstand freezing and boiling temperatures.

Fire Extinguisher

USE REPLY CARD—CIRCLE No. 18

Redi-Flo, a fast-flowing dry chemical fire extinguisher, is available from Stop-Fire Inc., Brooklyn, N. Y. Designed to eliminate faulty operation due to clogging, it contains Dri-Kem, an improved chemical that adds free-flowing qualities.

Molded V-Belt Sheaves

USE REPLY CARD—CIRCLE No. 19

W. C. Products Inc., Santa Monica, Calif., offers a line of V-belt molded sheaves for light machinery drives. They are molded from Compolene, a fibrous material that is molded to close tolerances under

HOW TO SAVE MONEY ON STAMPING RUNS OF LESS THAN 10,000

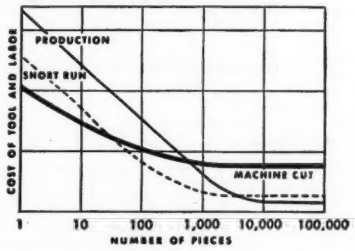
FOR EXAMPLE: TAKE THE PART ILLUSTRATED

If your total requirement is 1 to 65 parts, our Machine-Cut Method is the most economical. You pay no die costs whatsoever.

If your total requirement is for 65 to 7,000 parts, the Short Run Method using our exclusive Hecht-type dies, combined with specialized bench press operations, is most satisfactory. Die costs are extremely reasonable.

If your total requirement exceeds 7,000 parts, the standard Production Method, using the best quality dies, gives the lowest unit cost. Die costs, though higher, can be spread over a greater number of parts.

The logarithmic chart below shows the computation which the skilled Methods Engineer makes to arrive at this conclusion, for the particular part illustrated. Though the computation varies for almost every part, the general principle remains the same.



(Send today for our free, 12 page booklet full of helpful facts on buying stampings. Profusely illustrated.

. . . the exclusively short run supplier is *NOT* always the best source

The Methods Engineer, skilled in stamping practice, will tell you that a run of 10,000 or less might be produced by any one of three methods. Here's what decides which is the most economical:

1. **The quantity of each run**
2. **The *total* requirement for the part**
3. **The costs of various *types* of dies**
4. **The labor factor**

Quantity alone does not decide the method.

THE MOST IMPORTANT ECONOMY FACTOR IN BUYING STAMPINGS IN LIMITED QUANTITIES

Whenever possible, advise your stampings supplier of your total requirements. Your *second order* of the same part may justify a production-type die on the *first* order. The chart at left illustrates this. Whenever you can, avoid buying the expensive labor factor that is necessarily figured in the Machine-Cut or Short Run Methods.

Get your quotations from a stampings supplier who can impartially quote you on the most efficient production method. This will be the supplier, like our Stampings Division, who is equipped for all three!

STAMPINGS DIVISION

LAMINATED SHIM COMPANY, Inc.

3406 UNION STREET ESTABLISHED 1913 GLENBROOK, CONN.

FOR EFFICIENT PRODUCTION — WHETHER ONE PART OR A MILLION

how Bill Morton grows plants he never sees

He's got a green thumb, no doubt about it. Bill Morton can make sick plants grow strong and sturdy. And when it comes to *industrial* plants—factories—the Bill Mortons of America, taken together, make *them* grow, too.

The lawnmowers, wheelbarrows, trowels, shovels, sprinklers and other assorted items these fellows buy for home and yard maintenance keep many a manufacturer busy the year around. The plants that produce with presses prosper best because Bill individually and collectively, prefers the lighter, smoother, stronger, less costly items that press methods make possible.

If you make metal products, you can't afford to overlook this established public preference, the food that makes factories grow. Let a Clearing engineer show you how to use it to lower your costs and expand your market.

CLEARING MACHINE CORPORATION
6499 WEST 65th STREET • CHICAGO 38, ILL.
HAMILTON DIVISION, HAMILTON, OHIO

CLEARING PRESSES

CMC CLEARING

THE WAY TO EFFICIENT MASS PRODUCTION

high pressure. It cannot rust or corrode and is unaffected by moisture, oil, temperature, etc. Sizes available are from 2 to 6 inches OD, in graduations of ½-inch.

Electrode Holder

USE REPLY CARD—CIRCLE No. 20

Model A-732 Twecotong electrode holder is available from Tweco Products Co., Wichita 1, Kans. The 300-amp unit will handle from 7/32 through 1/16-inch electrodes. Welding cable may be soldered or clamped mechanically to body of the holder. It features a lightweight, high copper alloy for maximum conductivity.

Portable Air Compressor

USE REPLY CARD—CIRCLE No. 21

Model B-100 piston type portable automatic pressure regulated air compressor is available from National Tool & Equipment Co., Chicago, Ill. It has a 12 gallon stainless steel air receiver V-belt driven ½-hp, 115/230 v, single phase, 1725 rpm heavy duty ball bearing capacitor motor.

Diaphragm Valve

USE REPLY CARD—CIRCLE No. 22

Quick-As-Wink diaphragm operated spring return single plunger valve developed by C. B. Hunt & Son Inc., Salem, O., is for use when only low pressure air is available for pilot control. It can be operated with instrument air at pressures from 12 to 35 psi on the diaphragm.

Measures Surface Temperature

USE REPLY CARD—CIRCLE No. 23

Measuring roll surface temperatures from minus 40° F to plus 450° F is possible with the temperature measuring head developed by Foxboro Co., Foxboro, Mass., and used in conjunction with a

USE A **REPLY CARD**
Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

71. Cleaning For Finishing

Kelite Products, Inc. — "Scientific Cleaning for Modern Metal Finishing" is title of 6-page illustrated bulletin 121 covering application of compounds using principle of Kelite pH control. Included in information on phosphatizing, removal of heat treat scale, preparation of die cast parts for plating, removal of various materials and discussion of 23 other cleaning or processing jobs.

72. Insert Type Tool Holders

Metal Carbides Corp.—4-page illustrated booklet KL-52 deals with design, applications and prices of mechanically mounted Klamp-Lok tool with vertically clamped Talide inserts. These inserts have multiple-sided cutting edges and can be removed for regrinding without disturbing set-up of tool holder.

73. Concrete Floors Durable

Master Builders Co.—Ever hear of an "iron-clad" concrete floor. Described and illustrated in 36-page AIA file No. 4-E-6 is Masterplate floor which is concrete having an armored surface of metallic aggregate. Surface is wear and spark resistant and easy to clean. Brochure covers outstanding features, colors available and installation methods.

74. Electric Welders

Hobart Brothers Co.—Multirange dual-control electric arc welders with remote control features are detailed in 4-page illustrated folder J3901. Five standard models cover range of 150 to 600 amperes in either stationary or portable types.

75. Industrial Tires

Monarch Rubber Co.—"The Catalog & Handbook of Industrial Tires" is a 32-page illustrated guide to selection, application and maintenance of solid and cushion rubber tires designed for use on all types of industrial materials handling vehicles. Detailed is a sound program of tire care which aids in getting the maximum number of ton-miles from tires. Equipment manufacturer's specification section lists size and type of tire for leading makes and models of industrial power trucks.

76. Snap-Action Switch

Minneapolis - Honeywell Regulator Co., Micro Switch Div.—Complete data and rating information on make-before-break type snap-action limit switch are contained in 2-page data sheet No. 63. This control assures continuity of performance in a multi-stage machine having sequential operation that is controlled electrically.

77. Hobs

Michigan Tool Co.—The applicability of precision ground, class B ground, accurate unground and roughing hobs is subject of 4-page illustrated bulletin H-52. Included is useful table of tolerances of various types of hobs which aids in their selection and application.

78. Boring Heads

Maxwell Co.—Features and specifications of Mastur adjustable precision boring heads are outlined in illustrated bulletin No. 50. Offset tools are made of heat treated alloy steel and have graduated screw heads. Capacities made are 7, 11 and 15 in.

79. Vertical Profiler

Morey Machinery Co.—Fast economical duplication of small parts requiring accurate interchangeability is feature of redesigned model 12M vertical profiler which is described in 8-page illustrated brochure. This machine tool is also adaptable for wide range of milling applications. Single and two spindle models are available.

6-9-52

STEEL
Penton Building, Cleveland 13, Ohio

Please send literature or detailed information on subjects circled at left to—

NAME _____ TITLE _____

COMPANY _____

PRODUCTS MANUFACTURED _____

ADDRESS _____

CITY AND STATE _____

This card MUST be completely filled out. Please TYPE or PRINT.

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

FIRST CLASS
Permit No. 36
(Sec. 34.9 P.L.&R.)
CLEVELAND, OHIO

BUSINESS REPLY CARDS
No Postage Stamp Necessary if Mailed in the United States

—POSTAGE WILL BE PAID BY—

STEEL
Penton Building
Cleveland 13, Ohio

Readers Service Dept.

80. Inspection Control Forms

McCaskey Register Co., Industrial Div.—Reproduced and described in 4-page bulletin A-512 are seven multiple-copy forms designed to control inspection of tools, gages and measuring instruments. Procedures for reinspection date followup, central clearance records of each employee's gages and history records are outlined.

81. Belt Repairing Compound

Magic Chemical Co.—Here is a product that increases conveyor belt life. It is Magic-Vulc plastic rubber for repairing belts, described and illustrated in folder No. 201. It can be applied to worn spots by inexperienced personnel, requires no special machinery or heat and belt is ready to use in 12 hours.

82. Tachometer Indicators

Metron Instrument Co.—Illustrated 2-page data sheet No. 42 HJK describes and illustrates type 42H, 42J and 42K tachometer indicators which feature ¼-per cent accuracy, spread scale and are for fixed installation. Principle of operation, outstanding features, applications, selection of indicators and heads, a table of speed ranges and installation and use are covered.

83. Nonshrink Grouting

Master Builders Co.—Step-by-step procedures, common methods and how to use Embeco nonshrink method of grouting is covered in 16-page illustrated catalog E-1b. Characteristics are detailed and compressive strengths when mixed with various materials are given. Result is a fast hardening, ductile and oil and water resistant grout.

84. Powder Washing

Linde Air Products Co.—Removal of excess or defective material from castings is described in 8-page illustrated booklet "Powder Washing for Metal Removal." Equipment for powder washing is discussed as well as techniques for removing fins, pads and sand inclusions. Removal of chill rods, bars, reinforcing nails and core chaplets is also covered.

85. Pallet Loader

Lamson Corp.—16-page bulletin 748 is descriptive of automatic pallet loader which is capable of forming an infinite number of pallet patterns. Photos and sketches show unit in operation and make clear its place in volume package production. Sequential photos follow operation of pallet loader as it loads pallets in various patterns, according to nature of cartons handled.

86. Twisted Wire Brushes

Mill-Rose Co.—There's a size and type of twisted wire brush for practically every industrial use. For full information on these ⅛ to 1-in. diameter brushes for hand or power driven applications, get a copy of 4-page illustrated bulletin entitled "Twisted Wire Brushes."

EDITORIAL REPRINTS:

87. Reclaiming Tools

"New Life for Tools" is headline of STEEL reprint which reports on program of tool rehabilitation and salvage conducted by nonproductive material control department of the Chrysler Corp. More than 100,000 screw drivers, drills and other worn tools were reworked to conform to new specifications.

88. Pure Metals

Technique developed by American Cyanamid Co. for chemically treating ore concentrates to produce pure metals is described in STEEL reprint entitled "Pure Metals from Ore Concentrates." Process involves extraction of pure nickel, copper and cobalt and will permit economical mining of ore bodies with lower metal content.

89. Redesigning Castings

Lower costs, reduced weight, better appearance of parts and improved castability can be achieved by redesigning castings. STEEL reprint of brief article entitled "Casting Redesign May Result in Multiple Savings" tells how one foundry solved a production problem by redesigning casting of a tractor drive spacer part.

90. Metal Powder Pressing

Although no process exists for producing hot pressed metal powder mechanical parts rapidly on a commercial scale, the method is being successfully applied on costly materials, such as for tungsten and carbide pieces. STEEL reprint "Hot Pressing Applications Increase" tells how it's done and discusses pressures used, shrinkage, producing heavy metals, distortion, metal removal and other relative factors.

BUSINESS REPLY CARDS

No Postage Stamp Necessary if Mailed in the United States

—POSTAGE WILL BE PAID BY—

STEEL
Penton Building
Cleveland 13, Ohio

Readers Service Dept.

FIRST CLASS
Permit No. 36
(Sec. 34.9 P.L.&R.)
CLEVELAND, OHIO

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

STEEL
Penton Building, Cleveland 13, Ohio

6-9-52

Please send literature or detailed information on subjects circled at left to—

NAME _____ TITLE _____

COMPANY _____

PRODUCTS MANUFACTURED _____

ADDRESS _____

CITY AND STATE _____

This card MUST be completely filled out. Please TYPE or PRINT.

high speed Dynalog recording controller. The temperature-sensitive element is a miniature resistance bulb that lightly rides on the surface of the roll.

Fiberglass Safety Helmet

USE REPLY CARD—CIRCLE No. 24

Industrial Products Co., Philadelphia 33, Pa., introduces a line of fiberglass safety helmets and caps. Helmets are designed for the variance in head shapes and allow, in all cases, an adequate space between head and crown. They are fireproof and provide full protection against flash flame.

Improved Furan Coating

USE REPLY CARD—CIRCLE No. 25

Carbo-Kote 6020 thermosetting furan coating, made by Carboline Co., St. Louis 5, Mo., has been improved in physical characteristics and ease of application. It may be applied by brush or spray at room temperature to steel, concrete, carbon, stoneware, rubber, wood and porcelain.

Clip Fastens Panels Together

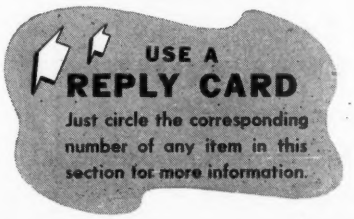
USE REPLY CARD—CIRCLE No. 26

Speed Clip, offered by Tinnerman Products Inc., Cleveland, O., is a dart shaped fastener that may be used to secure two or more panels together. Clip is made in two sizes: One for a panel thickness range of 0.224 to 0.244-inch and the other for a range of 0.161 to 0.181-inch.

Surface Pyrometer

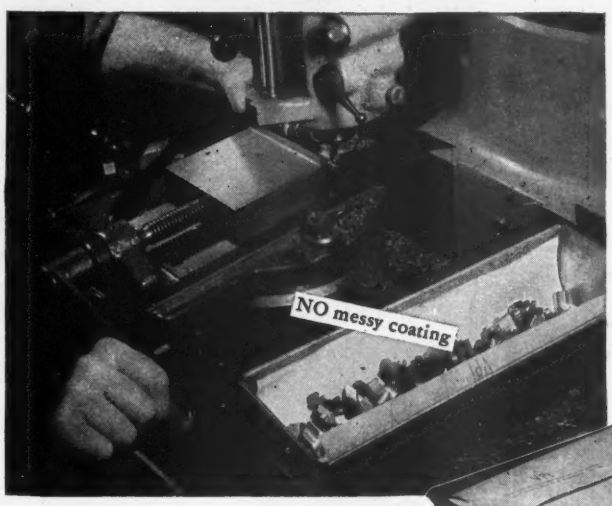
USE REPLY CARD—CIRCLE No. 27

A surface pyrometer for accurate surface and subsurface temperature measurements is introduced by Pyrometer Instrument Co., Bergenfield, N. J. It is available with 14 different types of thermocouples and extension arms. Thermocouples are interchangeable without adjustment or recalibration.



Angier

Vapor from Paper Stops Rust



Now parts in-process are

stored clean to stay clean

PROBLEM: High humidity and acid fumes were causing rust to form while these shiny precision parts for sewing machines were being turned out. Protective dips would involve a lot of time and bulky equipment to "clean" the parts next day.

SOLUTION: By simply lining tote pans with Angier VPI wrap, the parts are *stored* clean . . . and they *stay* clean. They are bright and rust-free when removed from the pans — even if they are stored for months. All because VPI vapor permeates the area inside the pans to make moisture and factory atmosphere harmless to metal surfaces. No oil or grease coating is necessary. So "cleaning" time is saved.

WHAT IS YOUR PROBLEM . . . storage of parts in-process, storage for inventory . . . or *shipping* metal products? To get "VPI Facts", check below the products stored or shipped by you. Send today to the most experienced name in vapor rust preventives — Angier Corporation, Framingham 8, Mass.

☐ Machinery-Industrial, Metal Working, Farm, Office, Construction.
☐ Steel in process of fabrication.
☐ Electrical Machinery, Appliances, Products.
☐ Instruments and clocks.
☐ Fabricated Products—Cutlery, Hardware, etc.
☐ Ordnance Equipment.
☐ Transportation Equipment—Aircraft, Auto, Naval, Railroad, etc
☐ Others:

Angier VPI® Wrap

The PROVEN Vapor Rust Preventive

Distributors of Angier Industrial Papers in All Principal Cities

THE STEEL YOU BUY DEMANDS *Complete Integration* TOO!

For only *complete integration* of every process can assure you quality-as-specified. Here is the big reason for Alan Wood Steel Company's *single control* of each production step—from ore mine to finished product.

Alan Wood steel making takes nothing for granted—involves no outside factors. We mine our own ore, test it in our own laboratories, smelt it in our own furnaces, roll it in our own rolling mills. And rigid Alan Wood quality control checks on every process—every step of the way.

Here is your warranty of *quality steel as specified!*

SPECIALTY PRODUCTS

STAINLESS CLAD STEEL

PERMACLAD Stainless Clad Steel combines the surface characteristics of solid stainless with the easy forming qualities of mild carbon steel—provides corrosion resistance at lower cost.

ABRASIVE ROLLED STEEL FLOOR PLATE

A.W. ALGRIP Abrasive Rolled Steel Floor Plate is made by rolling tough abrasive grain as an integral part of the upper portion of steel plate. Result: Positive protection against slipping, even on steep inclines.

ROLLED STEEL FLOOR PLATE
A.W. SUPER-DIAMOND

Rolled Steel Floor Plate, made with an allover, engineered pattern of raised, skid-resistant diamonds, is easy to clean, easy to match, and grips without a slip.

Over 125 Years of Iron and Steel Making Experience

PRODUCTS OF ALAN WOOD STEEL COMPANY

IRON PRODUCTS
"Swede" Pig Iron
Foundry, Malleable, Bessemer and Basic

STEEL PRODUCTS
Plates (Sheared)
Tank, Ship, Boiler, Flange and Structural Qualities
Furnished in carbon, copper, or alloy analyses
A. W. Dynalloy
(High Strength Plates)

HOT ROLLED SHEETS
Special qualities in carbon, copper, or alloy analyses
A. W. Dynalloy
(High Strength Sheets)

HOT ROLLED STRIP
Coiled and cut lengths
Carbon, copper, or alloy analyses

A. W. ROLLED STEEL FLOOR PLATES
A. W. ALGRIP Abrasive
A. W. SUPER-DIAMOND Pattern

STAINLESS CLAD STEEL
PERMACLAD Sheets and Plates
Standard and special qualities available in desired finishes

A.W. CUT NAILS
Reading Brand
Black, Quenched and Tempered

MINE PRODUCTS
Iron Ore Concentrates, Sintered Concentrates, Crushed Stone, Grit, Sand and Engine Sand

COKE
Foundry, Industrial and Domestic

COAL CHEMICALS
Coke Oven Gas • Crude Coal Tar Ammonium Sulphate • Industrial Benzol, Toluol, Xylol • Motor Benzol • Crude Solvent Naphtha Crude Naphthalene • Crude Tar Bases • Sodium Phenolate • Crude Light Oil Still Residue

ONE CONTROL FROM MINE TO USER

ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PA.

IVY ROCK, PA. • SWEDELAND, PA. • DOVER, N.J. • OXFORD, N.J.

The Market Outlook

THERE could have been worse times for a steelworkers' strike.

On the favorable side when the strike began last week were: Consumers' stocks of steel were better than they had been for a long time. Consuming plants were not far away from their vacation periods, when they use no steel at all.

The strike which began last week after two short-lived stoppages, one in April and one in May, could have started last Jan. 1, but negotiations and government intervention staved it off five months. The nation has had the benefit of five months of steel production, and with business slowing down and the defense program stretched out the consumers have had a chance to build up steel stocks.

GOOD FOR A MONTH—Most metalworking plants, particularly those in the sluggish consumer durable goods field, have enough steel on hand to carry them through June. That will be up to the period when the bulk of the steel users have scheduled vacations of one to two weeks.

If the steel strike lasts only a couple of weeks its effects will be largely offset by the lack of consumption during the vacation periods of metalworking plants. If the strike continues over a longer period and consumer inventories become unbalanced, various consumers may advance their vacation schedules, with the thought they will have the vacations out of the way by the time steel starts flowing from the mills again.

STOP EARLY, START EARLY—Some consumers may curtail operations substantially, or even suspend them entirely, before inventories become too unbalanced, with the belief that it would be better to be in position to resume promptly on a normal scale once the steel strike is ended.

Consumers relying principally on hot-rolled carbon bars likely will be affected first, for inventories of this product are the lightest of all major items.

Even though a steel strike now is less disastrous than it would have been last January there will be some afterpains. Some tonnage now scheduled for third-quarter delivery will have to be pushed into the fourth quarter.

A TRICKLE—The strike didn't entirely halt the output of steel. Some producers have contracts with unions other than the United Steelworkers of America or have arrangements whereby operations are not to be stopped until some time after any general strike. Still producing is 13.4 per cent of the country's steelmaking capacity.

That capacity plus a day and a half of operation of the rest of the nation's capacity put STEEL's index of the production of steel for ingots and castings at 37.5 per cent of capacity during the week ended June 7. That is equivalent to around 779,000 net tons. In the preceding week, operations were at 102.5 per cent of capacity.

The 37.5 per cent rate is the lowest since November, 1949.

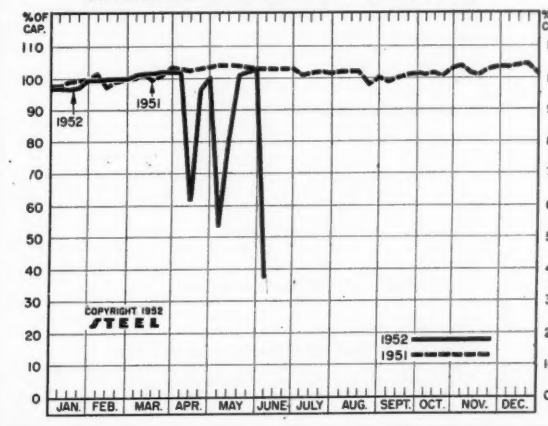
QUICK STEPS—To help conserve steel during the strike, the government took two immediate steps. One was a ban on shipments of steel from warehouses to producers of consumer durable goods. The other was organization of an interagency committee to allocate on the basis of military need the steel that will be produced by mills not struck.

At the beginning of the strike, carbon bars were the tightest product supplywise. Next was heavy and wide sheared plate, although in some areas the pressure for delivery was easing.

COMFORTABLE—Most foundries will be able to coast along for quite awhile on their pig iron supplies, and if necessary they can increase the ratio of scrap to pig iron in their melts. Cast scrap is plentiful and is below government ceiling prices.

The steelmaking scrap market, which already was weakening, is expected to deteriorate further as a result of the steelworkers' strike. In one steelmaking area a steel producer last week cut its offering price on scrap as much as $5 a ton, although there were no takers.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended June 7†	Change	Same Week 1951	Same Week 1950
Pittsburgh	24.5	—78.5*	100	101.5
Chicago	37	—69	106	103
Mid-Atlantic	46	—50	101	98
Youngstown	28	—77	105	106
Wheeling	61.5	—34*	98.5	106.5
Cleveland	25	—80.5*	100	99.5
Buffalo	12	—92	104	104
Birmingham	28	—74	100	100
New England	28	—47	89	86
Cincinnati	60	—34.5	102	106
St. Louis	36	—59.5	99.5	91
Detroit	45	—65	103	104
Western	51	—51.5	105.5	101
Estimated national rate	37.5	—65	103	101

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week. † Preliminary.

The Metalworking Outlook—p. 53 Production-Engineering News—p. 89

Composite Market Averages

	June 5 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100) ..	171.92†	171.92†	171.92†	171.92	118.67
Index in cents per lb.	4.657†	4.657†	4.657†	4.657	3.215
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$106.32†	$106.32†	$106.32†	$106.32	$69.82
No. 2 Fdry, Pig Iron, GT..	52.54	52.54	52.54	52.54	32.99
Basic Pig Iron, GT	52.16	52.16	52.16	52.16	32.49
Malleable Pig Iron, GT ...	53.27	53.27	53.27	53.27	33.71
Steelmaking Scrap, GT	43.00	43.00	43.00	44.00	30.08

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are base on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

† Preliminary, pending 1952 tin plate contract price announcement.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	June 5 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.70	3.70	3.70	3.70	2.60
Bars, H.R., Chicago	3.70	3.70	3.70	3.70	2.60
Bars, H.R., del. Philadelphia	4.252	4.252	4.252	4.20	2.98
Bars, C.F., Pittsburgh	4.55	4.55	4.55	4.55	3.20
Shapes, Std., Pittsburgh ..	3.65	3.65	3.65	3.65	2.50
Shapes, Std., Chicago	3.65	3.65	3.65	3.65	2.50
Shapes, del. Philadelphia ..	3.93	3.93	3.93	3.91	2.64
Plates, Pittsburgh	3.70	3.70	3.70	3.70	2.65
Plates, Chicago	3.70	3.70	3.70	3.70	2.65
Plates, Coatesville, Pa. ...	4.15	4.15	4.15	4.15	2.80
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.70	2.65
Plates, Claymont, Del.	4.15	4.15	4.15	4.15	2.80
Sheets, H.R., Pittsburgh ..	3.60–75	3.60–75	3.60–75	3.60–75	2.50
Sheets, H.R., Chicago	3.60	3.60	3.60	3.60	2.50
Sheets, C.R., Pittsburgh ..	4.35	4.35	4.35	4.35	3.20
Sheets, C.R., Chicago	4.35	4.35	4.35	4.35	3.20
Sheets, C.R., Detroit	4.55	4.55	4.55	4.55	3.35
Sheets, Galv., Pittsburgh ..	4.80	4.80	4.80	4.80	3.55
Strip, H.R., Pittsburgh ...	3.75-4.00	3.75-4.00	3.75-4.00	3.75-4.00	2.50
Strip, H.R., Chicago	3.50	3.50	3.50	3.50	2.50
Strip, C.R., Pittsburgh	4.65-5.35	4.65-5.35	4.65-5.35	4.65-5.35	3.20
Strip, C.R., Chicago	4.90	4.90	4.90	4.90	3.30
Strip, C.R., Detroit	4.85-5.60	4.85-5.60	4.85-5.60	4.35-5.60	3.35
Wire, Basic, Pittsburgh ...	4.85-5.10	4.85-5.10	4.85-5.10	4.85-5.10	3.425
Nails, Wire, Pittsburgh	5.90-6.20	5.90-6.20	5.90-6.20	5.90-6.20	4.125
Tin plate box, Pittsburgh..	$8.70	$8.70	$8.70	$8.70	$5.75

SEMIFINISHED

Billets, forging, Pitts.(NT)	$66.00	$66.00	$66.00	$66.00	$50.00
Wire rods, ⅜-⅝", Pitts. ..	4.10–30	4.10–30	4.10–30	4.10–30	2.55

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$53.00	$53.00	$34.00
Basic, Valley	52.00	52.00	52.00	52.00	33.00
Basic, del. Phila.	56.75	56.75	56.75	56.49	35.52
No. 2 Fdry. Pitts.	52.50	52.50	52.50	52.50	33.50
No. 2 Fdry, Chicago	52.50	52.50	52.50	52.50	33.00
No. 2 Fdry, Valley	52.50	52.50	52.50	52.50	33.50
No. 2 Fdry, del. Phila. ...	57.25	57.25	57.25	56.99	36.02
No. 2 Fdry, Birm.	48.88	48.88	48.88	48.88	29.88
No. 2 Fdry (Birm.) del. Cin.	55.49	55.49	55.49	55.33	34.75
Malleable, Valley	52.50	52.50	52.50	52.50	33.50
Malleable, Chicago	52.50	52.50	52.50	52.50	33.50
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	66.00	40.50
Ferromanganese, Etna, Pa.	188.00	188.00	188.00	188.00	140.25*

* F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt. Pitts...	$44.00	$44.00	$44.00	$45.00	$30.00
No. 1 Heavy Melt, E. Pa...	42.50	42.50	42.50	43.50	31.50
No. 1 Heavy Melt, Chicago.	42.50	42.50	42.50	43.50	28.75
No. 1 Heavy Melt, Valley..	44.00	44.00	44.00	45.00	31.25
No. 1 Heavy Melt, Cleve...	43.00	43.00	43.00	44.00	30.75
No. 1 Heavy Melt, Buffalo.	43.00	43.00	43.00	44.00	31.50
Rails, Rerolling, Chicago ..	52.50	52.50	52.50	52.50	34.00
No. 1 Cast, Chicago	49.00*	49.00*	49.00*	49.00*	40.00

* F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connlsvl. ..	$14.75	$14.75	$14.75	$14.75	$8.75–9.50
Beehive, Fdry, Connlsvl. ..	17.50	17.50	17.50	17.50	9.75–11.50
Oven Fdry, Chicago	23.00	23.00	23.00	21.00	15.10

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	24.50	21.50-23.00
Zinc, E. St. Louis	16.00	19.50	19.50	17.50	10.50
Lead, St. Louis	14.80	14.80	16.80	16.80	14.80-14.85
Tin, New York	121.50	121.50	121.50	139.00	80.00
Aluminum, del.	19.00	19.00	19.00	19.00	15.00
Antimony, Laredo, Tex. ..	39.00	39.00	44.00	42.00	33.00
Nickel, refinery, duty paid.	56.50	56.50	56.50	56.50	35.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$54.00	$54.50	$55.00	$55.50
NewYork, del.	....	58.28	58.78	....
Newark, del.	57.02	57.52	58.02	58.52
Philadelphia, del.	56.75	57.25	57.75	58.25
Birmingham District				
Alabama City, Ala. R2	48.38	48.88	....	....
Birmingham R2	48.38	48.88	....	....
Birmingham S9	48.38	48.88	....	....
Woodward, Ala. W15	48.38	48.88	....	....
Cincinnati, del.	....	55.49	....	....
Buffalo District				
Buffalo R2	52.00	52.50	53.00	....
Buffalo H1	52.00	52.50	53.00	....
Tonawanda, N.Y. W12	52.00	52.50	53.00	....
No. Tonawanda, N.Y. T9	....	52.50	53.00	....
Boston, del.	62.11	62.61	63.11	....
Rochester, N.Y., del.	54.88	55.38	55.88	....
Syracuse, N.Y., del.	55.91	56.41	56.91	....
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary, Ind. U5	52.00	....	52.50	....
IndianaHarbor, Ind. I-2	52.00	....	52.50	....
So. Chicago, Ill. W14	52.00	52.50	52.50	....
So. Chicago, Ill. Y1	52.00	52.50	52.50	....
So. Chicago, Ill. U5	52.00	....	52.50	53.00
Milwaukee, del.	54.06	54.56	54.56	55.06
Muskegon, Mich., del.	....	58.47	58.47	....
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	....
Akron, O., del. from Cleve.	54.61	55.11	55.11	55.61
Lorain, O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	....
Erie, Pa. I-3	52.00	52.50	52.50	53.00
Everett, Mass. E1	....	59.75	60.25	....
Fontana, Calif. K1	58.00	58.50	....	....
Seattle, Tacoma, Wash., del.	....	60.66	....	....
Portland, Oreg., del.	....	60.66	....	....
LosAngeles, SanFrancisco, del.	60.16	60.66	....	....
GraniteCity, Ill. G4	53.90	54.40	54.90	....
St. Louis, del. (inc. tax).....	54.66	55.16	55.66	....
Ironton, Utah C11	52.00	52.50	....	....
Geneva, Utah C11	52.00	52.50	....	....
LoneStar, Tex. L6	48.00	*48.50	48.50	....
Minnequa, Colo. C10	54.00	55.00	55.00	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	52.50	52.50	53.00
Pitts., N.&S. sides, Ambridge, Aliquippa, del.	....	53.80	53.80	54.30
McKeesRocks, del.	....	53.54	53.54	54.04
Lawrenceville, Homestead, McKeesport, Monaca, del.	....	54.07	54.07	54.57
Verona, del.	....	54.57	54.57	55.07
Brackenridge, del.	....	54.82	54.82	55.32
Bessemer, Pa. U5	52.00	....	52.50	53.00
Clairton, Rankin, So. Duquesne, Pa. U5	52.00	....	....	....
McKeesport, Pa. N3	52.00	....	....	53.00
Monessen, Pa. P7	54.00	....	....	....
Sharpsville, Pa. S6	....	....	52.50	53.00
Steelton, Pa. B2	54.00	54.50	55.00	55.50
Swedeland, Pa. A3	56.00	56.50	57.00	57.50
Toledo, O. I-3	52.00	52.50	52.50	53.00
Cincinnati, del.	57.47	57.97	....	....
Troy, N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard, O. Y1	52.00	52.50	52.50	....
Youngstown Y1	52.00	52.50	52.50	....
Youngstown U5	52.00	....	....	53.00
Mansfield, O., del.	56.65	57.15	57.15	57.65

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$62.50
Buffalo H1	63.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for each 0.045% max. P)

NiagaraFalls, N.Y. P15	$88.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$66.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.00
Steelton, Pa. B2	60.00
Philadelphia delivered	63.55
Troy, N.Y. R2	60.00

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, June 5, 1952; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ..$79.00
Munhall,Pa. U5 .....52.00
Seattle S24 .....73.00

INGOTS, Alloy (NT)
Detroit R7 .....$54.00
Fontana,Calif. K1 ....80.00
Houston S5 .....62.00
Midland,Pa. C18 .....54.00
Munhall,Pa. U5 .....54.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ...$56.00
Clairton,Pa. U5 .....56.00
Ensley,Ala. T2 .....56.00
Fairfield,Ala. T2 .....56.00
Fontana,Calif. K1 ....75.00
Gary,Ind. U5 .....56.00
Johnstown,Pa. B2 ....56.00
Lackawanna,N.Y. B2..56.00
Munhall,Pa. U5 .....56.00
So.Chicago,Ill. U5 ...56.00
So.Duquesne,Pa. U5 ..56.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$66.00
Buffalo R2 .....66.00
Canton,O. R2 .....66.00
Clairton,Pa. U5 .....66.00
Cleveland R2 .....66.00
Conshohocken,Pa. A3..73.00
Detroit R7 .....69.00
Ensley,Ala. T2 .....66.00
Fairfield,Ala. T2 .....66.00
Fontana,Calif. K1 ...85.00
Gary,Ind. U5 .....66.00
Geneva,Utah C11 ....66.00
Houston S5 .....74.00
Johnstown,Pa. B2 ....66.00
Lackawanna,N.Y. B2..66.00
LosAngeles B3 .....85.00
Munhall,Pa. U5 .....66.00
Seattle B3 .....85.00
So.Chicago R2,U5,W14..66.00
So.Duquesne,Pa. U5 ..66.00
So,SanFrancisco B3 ..85.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$70.00
Buffalo R2 .....70.00
Canton,O. R2 .....70.00
Canton,O.(29) T7 ....66.00
Conshohocken,Pa. A3..77.00
Detroit R7 .....73.00
Fontana,Calif. K1 ....89.00
Gary,Ind. U5 .....70.00
Houston S5 .....78.00
Ind.Harbor,Ind. Y1 ...70.00
Johnstown,Pa. B2 ....70.00
Lackawanna,N.Y. B2..70.00
LosAngeles B3 .....90.00
Massillon,O. R2 .....70.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....70.00
So.Chicago R2,U5,W14..70.00
So.Duquesne,Pa. U5 ..70.00
Struthers,O. Y1 .....70.00
Warren,O. C17 .....70.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 .....$82.00
Cleveland R2 .....82.00
Fontana,Calif. K1 ...103.00
Gary,Ind. U5 .....82.00
Massillon,O. R2 .....82.00
So.Chicago,Ill. R2 ...82.00
So.Duquesne,Pa. U5 ..82.00

SHEET BARS (NT)
Fontana,Calif. K1 ...$89.00

SKELP
Aliquippa,Pa. J5 ....$3.45
Munhall,Pa. U5 .....3.35
Warren,O. R2 .....3.35
Youngstown R2, U5 ..3.35

WIRE RODS
Alton,Ill. L1 .....4.40
AlabamaCity,Ala. R2 ..4.10
Buffalo W12 .....4.10
Cleveland A7 .....4.10
Donora,Pa. A7 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 ....4.90
Houston S5 .....4.50
Johnstown,Pa. B2 ....4.10
Joliet,Ill. A7 .....4.10
LosAngeles B3 .....4.90
Minnequa,Colo. C10 ...4.35
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y. B11.4.10
Pittsburg,Calif. C11 ...4.75
Portsmouth,O. P12 ....4.30
Roebling,N.J. R5 .....4.20
So.Chicago,Ill. R2 ....4.10
SparrowsPoint,Md. B2..4.20
Sterling,Ill.(1) N15 ...4.10
Struthers,O. Y1 .....4.10
Torrance,Calif. C11 ...4.90
Worcester,Mass. A7 ...4.40

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.45
Lackawanna,N.Y. B2 ..4.45
Munhall,Pa. U5 .....4.45
So.Chicago,Ill. U5 ....4.45

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 .3.60
Aliquippa,Pa. J5 .....3.65
Bessemer,Ala. T2 .....3.65
Bethlehem,Pa. B2 ....3.70
Clairton,Pa. U5 .....3.65
Fairfield,Ala. T2 .....3.65
Fontana,Calif. K1 ....4.25
Gary,Ind. U5 .....3.65
Geneva,Utah C11 .....3.65
Houston S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.65
Johnstown,Pa. B2 ....3.70
KansasCity,Mo. S5 ....4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.25
Minnequa,Colo. C10 ...4.10
Munhall,Pa. U5 .....3.65
Niles,Calif.(22) P1 ....4.85
Phoenixville,Pa. P4 ...5.90
Portland,Oreg. O4 ....4.50
Seattle B3 .....4.30
So.Chicago,Ill. U5 W14.3.65
So.SanFrancisco B3 ...4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 ....3.90

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.35
Fontana,Calif. K1 .....5.55
Munhall,Pa. U5 .....4.35
So.Chicago,Ill. U5 .....4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.50
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa.(14) B2 .5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.10
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Ind.Harbor,Ind. I-2 ....5.50
Ind.Harbor,Ind. Y1 ....6.00
Johnstown,Pa. B2 ....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 .....6.05
Munhall,Pa. U5 .....5.50
Seattle B3 .....6.10
So.Chicago,Ill. U5 ....5.50
So.SanFrancisco B3 ...6.00
Struthers,O. Y1 .....6.00

Wide Flange
Bethlehem,Pa. B2 ....3.70
Clairton,Pa. U5 .....3.65
Fontana,Calif. K1 ....4.65
Lackawanna,N.Y. B2 .3.70
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

H.S., LA. Wide Flange
Aliquippa,Pa. J5 .....5.50
Lackawanna,N.Y. B2 .5.50
Munhall,Pa. U5 .....5.45
So.Chicago,Ill. U5 .....5.45

BEARING PILES
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.65
Bessemer,Ala. T2 .....5.65
Clairton,Pa. U5 .....5.65
Cleveland J5, R2 .....5.65
Conshohocken,Pa. A3 ..5.90
Fairfield,Ala. T2 .....5.65
Fontana,Calif.(30) K1..6.25
Gary,Ind. U5 .....5.65
Geneva,Utah C11 .....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Johnstown,Pa. B2 ....5.65
Munhall,Pa. U5 .....5.65
Pittsburgh J5 .....5.65
Seattle B3 .....6.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 ....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 .....5.65
Youngstown Y1 .....6.15

PLATES, Open-Hearth Alloy
Claymont,Del. C22 ....4.85
Coatesville,Pa. L7 ....5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 ....5.70
Gary,Ind. U5 .....4.75
Johnstown,Pa. B2 ....4.75
Munhall,Pa. U5 .....4.75
Sharon,Pa. S3 .....5.20
So.Chicago,Ill. U5 ....4.75
SparrowsPoint,Md. B2 ..4.75

FLOOR PLATES
Cleveland J5 .....4.75
Conshohocken,Pa. A3 ..4.75
Ind.Harbor,Ind. I-2 ....4.75
Munhall,Pa. U5 .....4.75
So.Chicago,Ill. U5 .....4.75

PLATES, Ingot Iron
Ashland,c.l. (15) A10 .3.95
Ashland,l.c.l. (15) A10..4.45
Cleveland,c.l. R2 .....4.30
Warren,O.c.l. R2 .....4.30

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Ashland,Ky. (15) A10 ..3.70
Bessemer,Ala. T2 .....3.70
Clairton,Pa. U5 .....3.70
Claymont,Del. C22 .....4.15
Cleveland J5, R2 .....3.70
Coatesville,Pa. L7 .....4.15
Conshohocken,Pa. A3 ..4.15
Fairfield,Ala. T2 .....3.70
Fontana,Calif.(30) K1 ..4.30
Gary,Ind. U5 .....3.70
GraniteCity,Ill. G4 .....4.40
Geneva,Utah C11 .....3.70
Harrisburg,Pa. C5 .....6.30
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 ....4.50
Munhall,Pa. U5 .....3.70
Pittsburgh J5 .....3.70
Seattle B3 .....4.60
Sharon,Pa. S3 .....3.95
So.Chicago,Ill. U5 W14..3.70
SparrowsPoint,Md. B2 ..3.70
Steubenville,O. W10 ....3.70
Warren,O. R2 .....3.70
Weirton,W.Va. W6 .....4.00
Youngstown R2, U5, Y1.3.70

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.45
Geneva,Utah C11 .....4.85

PLATES, Wrought Iron
Economy,Pa. B14 .....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Alton,Ill. L1 .....4.15
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....3.70
Buffalo R2 .....3.70
Canton,O. R2 .....3.70
Clairton,Pa. U5 .....3.70
Cleveland R2 .....3.70
Detroit R7 .....3.85
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
Los Angeles B3 .....4.40
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 .....5.05
N.Tonawanda,N.Y. B11..3.70
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
So.Chicago R2, U5, W14.3.70
So.Duquesne,Pa. U5 ....3.70
So.SanFran.,Cal. B3 ....4.45
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Weirton,W.Va. W6 .....3.85
Youngstown R2, U5 ....3.70

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.70
Atlanta A11 .....4.25
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Niles,Calif. P1 .....5.05
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....4.85

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....3.90

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.30
Buffalo R2 .....4.30
Canton,O. R2 .....4.30
Canton,O.(29) T7 .....3.95
Clairton,Pa. U5 .....4.30
Detroit R7 .....4.45
Ecorse,Mich. G5 .....4.65
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.30
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity, Mo. S5 ....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.30
Midland,Pa. C18 .....4.30
So.Chicago R2, U5, W14.4.30
So.Duquesne,Pa. U5 ....4.30
Struthers,O. Y1 .....4.30
Warren,O. C17 .....4.30
Youngstown U5 .....4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.55
Gary,Ind. U5 .....4.55
Youngstown U5 .....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.55
Bessemer,Ala. T2 .....5.55
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.55
Cleveland R2 .....5.55
Fairfield,Ala. T2 .....5.55
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.55
Ind.Harbor,Ind. I-2 ....5.55
IndianaHarbor,Ind. Y1 ..6.05
Johnstown,Pa. B2 .....5.55
Lackawanna,N.Y. B2 ..5.55
Los Angeles B3 .....6.25
Pittsburgh J5 .....5.55
Seattle B3 .....6.30
So.Duquesne,Pa. U5 ....5.55
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.05
Youngstown U5 .....5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....4.55
BeaverFalls,Pa. M12, R2 4.55
Buffalo B5 .....4.60
Camden,N.J. P13 .....5.00
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.55
Cleveland A7, C20 .....4.55
Detroit P17 .....4.70
Donora,Pa. A7 .....4.55
Elyria,O. W8 .....4.55
FranklinPark,Ill. N5 ...4.55
Gary,Ind. R2 .....4.55
GreenBay,Wis. F7 .....4.55
Hammond,Ind. L2, M13.4.55
Hartford,Conn. R2 .....5.10
Harvey,Ill. B5 .....4.55
LosAngeles R2 .....6.00
Mansfield,Mass. B5 ....5.10
Massillon,O. R2, R8 ....4.55
Monaca,Pa. S17 .....4.55
Newark,N.J. W18 .....5.00
Plymouth,Mich. P5 .....4.80
Pittsburgh J5 .....4.55
Putnam,Conn. W18 .....5.10
Readville,Mass. C14 ....5.10
St.Louis,Mo. M5 .....4.95
So.Chicago,Ill. W14 ....4.55
SpringCity,Pa.(5) K3 ..5.00
Struthers,O. Y1 .....4.55
Waukegan,Ill. A7 .....4.55
Youngstown F3, Y1 ....4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....5.40
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 .....5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Canton,O. R2 .....5.40
Canton,O.(29) T7 .....4.90
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7 .....5.45
Cleveland C20 .....5.40
Detroit P17 .....5.55
Donora,Pa. A7 .....5.45
Elyria,O. W8 .....5.40
Gary,Ind. R2 .....5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn. R2 .....5.85
Harvey,Ill. B5 .....5.40
Lackawanna,N.Y. B2 ..5.40
Mansfield,Mass. B5 ....5.85
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.75
Plymouth,Mich. P5 .....5.60
So.Chicago,Ill. R2, W14.5.40
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....5.45
Worcester,Mass. A7 ....5.75
Youngstown F3, Y1 ....5.40

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...4.75
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4..4.85
Huntngtn.W.Va.(3) W7.5.50
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....3.80
Tonawanda(3,4) B12 ...4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1.15.00
Dover(Eng.Bolt) U1 ..13.50
Dover(Wrght.Iron) U1 .12.25
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5 .14.50
McK.Rks(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.70
Atlanta A11 .....4.25
Buffalo R2 .....3.70
Cleveland R2 .....3.70
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.55
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....4.30
Pittsburgh J5 .....3.60
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ....3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 ....3.60
Torrance,Calif. C11 ....4.30
Warren,O. R2 .....3.60
Weirton,W.Va. W6 .....3.60
WestLeechburg,Pa. A4 ..3.75
Youngstown U5, Y1 .....3.60

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.75
Dover,O. R1 .....5.65
Ind.Harbor,Ind. I-2 ....5.40
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ....5.40

SHEETS, H.R. (14 ga., heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....5.40
Conshohocken,Pa. A3 ...5.65
Ecorse,Mich. G5 .....5.95
Fairfield,Ala. T2 .....5.40
Fontana,Calif. K1 .....6.35
Gary,Ind. U5 .....5.40
Ind.Harbor,Ind. I-2 ....5.40
Ind.Harbor,Ind. Y1 ....5.90
Irvin,Pa. U5 .....5.40
Lackawanna(35) B2 ....5.40
Pittsburgh J5 .....5.40
Sharon,Pa. S3 .....5.40
So.Chicago,Ill. U5 .....5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 .....5.40
Weirton,W.Va. W6 .....5.75
Youngstown U5 .....5.40
Youngstown Y1 .....5.90

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....6.65
Ecorse,Mich. G5 .....7.10
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.55
IndianaHarbor,Ind. Y1..7.05
IndianaHarbor,Ind. I-2..6.55
Irvin,Pa. U5 .....6.55
Lackawanna(37) B2 ....6.55
Pittsburgh J5 .....6.55
SparrowsPoint(38) B2..6.55
Warren,O. R2 .....6.55
Weirton,W.Va. W6 .....6.90
Youngstown Y1 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35
Cleveland J5 R2	4.35
Ecorse,Mich. G5	4.55
Fairfield,Ala. T2	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	5.30
Gary,Ind. U5	4.35
GraniteCity,Ill. G4	5.05
Ind.Harbor,Ind. I-2, Y1	4.35
Irvin,Pa. U5	4.35
Lackawanna,N.Y. B2	4.35
Middletown,O. A10	4.35
Pittsburg,Calif. C11	5.30
Pittsburgh J5	4.35
SparrowsPoint,Md. B2	4.35
Steubenville,O. W10	4.35
Warren,O. R2	4.35
Weirton,W.Va. W6	4.35
Youngstown Y1	4.35

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. U5	4.80
Granite City,Ill. G4	5.50
Ind.Harbor,Ind. I-2	4.80
Irvin,Pa. U5	4.80
Kokomo,Ind.(13) C16	5.20
MartinsFerry,O. W10	4.80
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.80
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.20
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. U5	5.35
Kokomo,Ind.(13) C16	5.75
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles,O. R2 (28)	5.65
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind I-2	5.70

SHEETS, Drum Body

Pittsburg,Calif. C11	4.30
Torrance,Calif. C11	4.30

SHEETS, Well Casing

Fontana,Calif. K1	5.10

RLUED Stock, 29 ga.

Yorkville,O. W10	6.80
Follansbee,W.Va.(23) F4	6.85

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Cleveland R2	4.65
Gary,Ind. U5	4.65
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	4.65
Irvin,Pa. U5	4.65
Middletown,O. A10	4.65
Youngstown Y1	4.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.35
Gary,Ind. U5	6.25
GraniteCity,Ill. G4	6.45
Ind.Harbor, Ind. I-2 Y1	6.25
Irvin,Pa. U5	6.25
Niles,O. R2	6.25
Pittsburg,Calif. C11	7.00
SparrowsPoint,Md. B2	6.35
Warren,O. R2	6.25
Weirton,W.Va. W6	6.25
Yorkville,O. W10	6.25

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	5.85
Gary,Ind U5	5.85
GraniteCity,Ill. G4	6.05
Ind.Harbor,Ind Y1	5.85
Irvin,Pa. U5	5.85
Yorkville,O. W10	6.15

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.60	...
Canton,O. R2	5.65	6.10
Fairfield,Ala T2.	5.60	5.85
Gary,Ind. U5	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. U5	5.60	5.85
Kokomo,Ind. C16.	6.25	...
MartinsFy,O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	5.85
Fairfield,Ala T2	5.85

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	3.85
Cleveland R2	4.20
Ind.Harbor,Ind. I-2	3.85
Warren,O. R2	4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.95
Middletown,O. A10	4.85
Warren,O. R2	4.95

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	5.55

SHEETS. ZINCGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.15	$7.40	$7.80
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.35	7.60	8.00
Ind.Harbor,Ind. I-2, Y1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.55
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cutlengths)	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	7.75	9.00	9.80
GraniteCity,Ill. G4 (cut lengths)	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	6.95	7.25	(34)	...
Mansfield,O. E6 (cut lengths)	7.10	7.25	7.75	9.00
Niles,O. N12 (cut lengths)	...	6.75	7.25	...
Vandergrift,Pa. U5	...	7.25	7.75	9.00
Warren,O. R2	6.95	7.25	7.75	9.00
Zanesville,O. A10	...	7.25	7.75	9.00

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower) Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	....	....	....
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.75	15.25
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

TINPLATE, American Coke (Base Box)

	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.45	$8.70
Fairfield,Ala. T2	8.55	8.80
Gary,Ind. U5	8.45	8.70
Ind.Har. I-2, Y1.	8.45	8.70
Irvin,Pa. U5	8.45	8.70
Pitts.,Cal. C11	9.20	9.45
Sp.Pt.,Md. B2	8.55	8.80
Warren,O. R2	8.45	8.70
Weirton,W.Va.W6.	8.45	8.70
Yorkville,O. W10.	8.45	8.70

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.60
Gary,Ind. U5	7.50
Irvin,Pa. U5	7.50
SparrowsPoint,Md. B2	7.60
Yorkville,O. W10	7.50

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.40

SHEET, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.50
Yorkville,O. W10	9.50

SHEET, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.20
Gary,Ind. U5	5.20
Mansfield,O. E6	6.05
Middletown,O. A10	5.20
Niles,O. N12	6.00
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.60

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.50

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.30
Conshohocken,Pa. A3	5.55
Ecorse,Mich. G5	5.95
Fairfield,Ala. T2	5.30
Fontana,Calif. K1	6.20
Gary,Ind. U5	5.30
Ind.Harb.,Ind. I-2	5.30
IndianaHarbor,Ind. Y1	5.80
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	6.05
Seattle B3	6.30
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	6.05
SparrowsPoint,Md. B2	4.95
Warren,O. R2	5.30
Weirton,W.Va. W6	5.75
Youngstown Y1	5.80
Youngstown U5	5.30

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	6.70
Cleveland A7	6.55
Dover,O. G6	7.30
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.55
Weirton,W.Va. W6	7.20
Youngstown Y1	7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.50
Alton,Ill. L1	3.95
Ashland,Ky.(8) A10	3.50
Atlanta A11	4.05
Bessemer,Ala. T2	3.50
Bridgeprt,Conn.(10) S15	4.00
Buffalo(27) R2	3.50
Butler,Pa. A10	3.50
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	3.90
Detroit M1	4.40
Ecorse,Mich. G5	3.80
Fairfield,Ala. T2	3.50
Fontana,Calif. K1	4.75
Gary,Ind. U5	3.50
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2, Y1	3.50
Johnstown,Pa.(25) B2	3.50
KansasCity,Mo.(9) S5	4.10
Lackawanna,N.Y.(32)B2	3.50
LosAngeles B3	4.25
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.55
NewBritain(10) S15	4.00
No.Tonawanda,N.Y. B11	3.50
Pittsburg,Calif. C11	4.25
Riverdale,Ill. A1	3.50
SanFrancisco S7	4.85
Seattle B3, N14	4.50
Sharon,Pa. S3	4.00
So.Chicago,Ill. W14	3.50
So.SanFrancisco B3	4.25
SparrowsPoint,Md. B2	3.50
Torrance,Calif. C11	4.25
Warren,O. R2	3.50
Weirton,W.Va. W6	3.60
WestLeechburg,Pa. A4	3.75
Youngstown U5, Y1	3.50

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	6.70
Gary,Ind. U5	5.50
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea, O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1	...	...	7.70	9.65	....
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	4.65	6.45	7.40	9.35	11.65
Dearborn,Mich. D3	5.60	7.05	7.65	...	....
Detroit D2	5.60	6.65	7.25	...	....
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
FranklinPark,Ill. T6	5.00	6.60	7.55	9.50	11.80
Harrison,N.J. C18	...	...	7.70	9.65	11.95
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11.95
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	....
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2	5.85	6.75	7.35	...	....
NewYork W3	...	7.10	7.70	9.65	11.95
Pawtucket,R.I. N8: Cleve.orPitts.Base	...	6.80	7.40	9.35	11.65
Worcester,Mass.,Base	5.85	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5	...	7.10	7.70	9.65	11.95
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7	4.95	6.75	7.70	9.65	11.95
Worcester,Mass. T6	5.50	6.75	7.70	9.65	11.95
Youngstown C8	...	6.80	7.40	9.35	11.65

Spring Steel (Tempered)				
Trenton,N.J. R5	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork W3	...	...	10.30	12.50	15.35

STRIP, Hot-Rolled Carbon

Midland,Pa. C18	5.85
NewBritn,Conn.(10) S15	5.45
Sharon,Pa. S3	5.85
Youngstown U5	5.50

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	5.35
Butler,Pa. A10	4.65
Cleveland A7, J5	4.65
Dearborn,Mich. D3	5.60
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	4.85
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	6.30
FranklinPark,Ill.(40)T6	4.90
Ind.Harbor,Ind. I-2	4.90
Lackawanna,N.Y. B2	4.65
LosAngeles C1	6.40
Mattapan,Mass. T6	5.50
Middletown,O. A10	4.65
NewBritain(10) S15	5.35
NewCastle,Pa. B4	5.35
NewCastle,Pa.(40) E5	5.25
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.15
Pawtucket,R.I. R3	6.00
Pawtucket,R.I.(21) N8	5.85
Riverdale,Ill.(40) A1	4.90
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.35
SparrowsPoint,Md. B2	4.65
Trenton,N.J. R5	6.00
Wallingford,Conn. W2	5.85
Warren,O.(40) T5	5.25
Warren,O. R2	4.65
Weirton,W.Va. W6	4.65
Youngstown C8 (40)	5.25
Youngstown Y1	4.65

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	4.65
Youngstown C8	5.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn. (10)$15	10.75
Carnegie,Pa. S18	10.60
Cleveland A7	10.00
Dover,O. G6	10.50
Fontana,Calif. K1	11.65
Harrison,N.J. C18	10.60
Midland,Pa. C18	10.60
NewBritn,Conn. (10)$15	10.75
Pawtucket,R.I. (11) N8	10.75
Pawtucket,R.I. (12) N8	11.05
Sharon,Pa. S3	10.60
Worcester,Mass. A7	10.30
Youngstown C8	10.60

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky. (8) A10	3.75
Warren,O. R2	4.10

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.25

TIGHT COOPERAGE HOOP

Atlanta A11	4.05
Riverdale,Ill. A1	3.90
Sharon,Pa. S3	4.15
Youngstown U5	3.75

WIRE, Tire Bead

Bartonville,Ill. (1) K4	10.90
Monessen,Pa. P16	11.40
Roebling,N.J. R5	11.55

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.95	6.40
Bartonville(19) K4	5.70	6.15
Buffalo W12	4.85	...
Cleveland A7	5.70	6.15
Crawfordsville M8	5.95	6.40
Donora,Pa. A7	5.70	6.15
Duluth,Minn. A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet,Ill. A7	5.70	6.15
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	5.80	6.05
LosAngeles B3	6.65	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer W12	5.15	...
Pitts.,Calif. C11	6.65	6.80
Prtsmth.,(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
SparrowsPt. B2	5.80	6.25
Sterling,Ill. (1)N15	5.70	6.15
Struthers,O. Y1	5.70	6.15
Torrance,Cal. C11	6.65	...
Worcester A7	6.00	6.45

ROPE WIRE

	(A)	(B)
Alton,Ill. L1	8.65	8.90
Bartonville,Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Fostoria,O. S1	8.85	9.10
Johnstown,Pa. B2	8.55	8.80
Monessen,Pa. P16	8.55	8.80
Monessen,Pa. P7	8.80	9.05
Muncie,Ind. I-7	8.75	9.00
Palmer,Mass. W12	8.85	9.10
Portsmouth,O. P12	8.55	8.80
Roebling,N.J. R5	8.85	9.10
SparrowsPt. B2	8.65	8.90
Struthers,O. Y1	8.55	8.80
Worcester J4, T6	8.85	9.10

(A) Plow and Mild Plow.
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	4.85
Aliquippa,Pa. J5	4.85
Atlanta A11	5.10
Alton,Ill. L1	5.05
Bartonville,Ill. (1) K4	4.85
Buffalo W12	4.85
Chicago W13	5.10
Cleveland A7, C20	4.85
Crawfordsville,Ind. M8	5.10
Donora,Pa. A7	4.85
Duluth,Minn. A7	4.85
Fairfield,Ala. T2	4.85
Fostoria,O. (24) S1	5.35
Houston S5	5.25
Johnstown,Pa. B2	4.85
Joliet,Ill. A7	4.85
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	4.95
LosAngeles B3	5.80
Minnequa,Colo. C10	5.10
Monessen,Pa. P7	5.10
Newark 6-8 ga. I-1	5.50
No.Tonawanda B11	4.85
Palmer,Mass. W12	5.15
Pittsburg,Calif. C11	5.80
Portsmouth,O. P12	5.25
Rankin,Pa. A7	4.85
So.Chicago,Ill. R2	4.85
So.SanFrancisco C10	5.80
SparrowsPoint,Md. B2	4.95
Sterling,Ill. (1) N15	4.85
Struthers,O. Y1	4.85
Torrance,Calif. C11	5.80
Waukegan,Ill. A7	4.85
Worcester,Mass. A7, T6	5.15

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7	5.85
Crawfordsville,Ind. M8	6.20
Detroit D2	6.20
Dover,O. G6	6.20
Fostoria,O. S1	6.00
Kokomo,Ind. C16	5.70
FranklinPark,Ill. T6	6.20
Massillon,O. R8	6.85
Monessen,Pa. P16	5.85
Monessen,Pa. P7	6.10
NewHaven,Conn. D2	6.50
Pawtucket,R.I. (12) N8	6.85
Trenton,N.J. R5	6.15
Worcester,Mass. A7	6.15
Worcester,Mass. T6	6.50
Worcester,Mass. W12	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.50
Monessen,Pa. P16	8.50
Muncie,Ind. I-7	8.70
Roebling,N.J. R5	8.80
SparrowsPoint,Md. B2	8.60
Johnstown,Pa. B2	8.50

WIRE (16 gage)	An'ld. Stone	Galv. Stone
Aliquippa J5	10.15	12.15
Bartonville(1)K4	10.25	11.95
Cleveland A7	10.25	12.15
Crawfrdsville M8	10.30	12.00
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.25	12.15
Kokomo C16	10.25	11.95
Minnequa C10	10.40	12.40
Palmer,Mass. W12	10.25	12.15
Pitts.Cal. C11	10.60	12.50
Prtsmth.(18) P12	10.55	12.30
SparrowsPt. B2	10.35	12.25
Waukegan A7	10.25	12.15

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.25
Alton,Ill. L1	6.45
Bartonville,Ill. (1) K4	6.25
Buffalo W12	6.25
Cleveland A7	6.25
Donora,Pa. A7	6.25
Duluth,Minn. A7	6.25
Fostoria,O. S1	6.25
Johnstown,Pa. B2	6.25
LosAngeles B3	7.20
Milbury,Mass. (12) N6	8.05
Monessen,Pa. P7, P16	6.25
Muncie,Ind. I-7	6.45
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11	7.20
Roebling,N.J. R5	6.55
Portsmouth,O. P12	6.25
So.Chicago,Ill. R2	6.25
So.SanFrancisco C10	7.20
SparrowsPoint,Md. B2	6.35
Struthers,O. Y1	6.25
Trenton,N.J. A7	6.55
Waukegan,Ill. A7	6.25
Worcester A7, T6, W12	6.55
Worcester,Mass. J4	6.75

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill. (1) K4	8.90
Buffalo W12	8.90
Chicago W13	8.90
Cleveland A7	8.90
Crawfordsville,Ind. M8	8.95
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.90
Kokomo,Ind. C16	8.90
Monessen,Pa. P16	8.90
Muncie,Ind. I-7	9.10
Palmer,Mass. W12	9.20
Portsmouth,O. P12	8.90
Roebling,N.J. R5	9.20
Waukegan,Ill. A7	8.90
Worcester,Mass. A7, T6	9.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	141
Atlanta A11	144
Bartonville,Ill. (19) K4	144
Crawfordsville,Ind. M8	146
Donora,Pa. A7	141
Duluth,Minn. A7	141
Fairfield,Ala. T2	141
Houston,Tex. S5	149
Johnstown,Pa. B2	141
Joliet,Ill. A7	141
KansasCity,Mo. S5	153
Kokomo,Ind. C16	143
Minnequa,Colo. C10	147
Monessen,Pa. P7	146
Pittsburg,Calif. C11	161
Portsmouth,O. (18) P12	148
Rankin,Pa. A7	141
So.Chicago,Ill. R2	137
So.SanFran.,Calif. C10	161
SparrowsPoint,Md. B2	143
Sterling,Ill. (1) N15	141

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	123
Atlanta A11	126
Bartonville,Ill. (19) K4	123
Crawfordsville,Ind. M8	132
Donora,Pa. A7	123
Duluth,Minn. A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	147
SparrowsPoint,Md. B2	125
Sterling,Ill. (1) N15	123

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.90
Alton,Ill. L1	6.10
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth,Minn. A7	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Monessen,Pa. P7, P16	5.90
NewHaven,Conn. A7	6.20
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
So.SanFrancisco C10	6.85
SparrowsPoint,Md. B2	6.00
Torrance,Calif. C11	6.85
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Worcester,Mass. A7	6.20

WOVEN FENCE, 9-15½Ga. Col.

AlabamaCity,Ala. R2	127
Ala.City,Ala.,17-18ga.R2	214
Aliquippa,Pa.9-14½ga.J5	131
Atlanta A11	134
Bartonville,Ill. (19) K4	131
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Johnstown,17ga.,6" B2	205
Johnstown,17ga.,4" B2	208
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	139
Monessen,Pa. P7	136
Pittsburg,Calif. C11	154
Portsmouth,O. (18) P12	138
Rankin,Pa. A7	131
So.Chicago,Ill. R2	127
Sterling,Ill. (1) N15	131

FENCE POSTS

ChicagoHts.,Ill. C2	140
Duluth,Minn. A7	125
Franklin,Pa. F5	140
Huntington,W.Va.,W7	140
Johnstown,Pa. B2	140
Marion,O. P11	140
Minnequa,Colo. C10	130
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12	140
Williamsport,Pa. S19	150

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa. (31) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85
Seattle B3	10.35

NAILS & STAPLES, Stock
To dealers & mfrs. (7) Col.

AlabamaCity,Ala. R2	118
Aliquippa,Pa. (13) J5	118
Atlanta A11	121
Bartonville,Ill. (19) K4	118
Chicago,Ill. W13	118
Cleveland A9	125
Crawfordsville,Ind. M8	122
Donora,Pa. A7	118
Duluth,Minn. A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	120
Sterling,Ill. (1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

NAILS, Cut (100 lb keg)
To dealers (33)

Conshohocken,Pa. A3	$7.85
Wheeling,W.Va. W10	7.35

TIE PLATES

Fairfield,Ala. T2	4.50
Gary,Ind. U5	4.50
Ind.Harbor,Ind. I-2	4.50
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	4.50
Pittsburg,Calif. C11	4.65
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	4.65

JOINT BARS

Bessemer,Pa. U5	4.70
Fairfield,Ala. T2	4.70
Ind.Harbor,Ind. I-2	4.70
Joliet,Ill. U5	4.70
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	4.70
Steelton,Pa. B2	4.70

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.15
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	6.15
Pittsburgh J5	6.15
Seattle B3	6.65
So.Chicago,Ill. R2	6.15
Struthers,O. Y1	6.15
Youngstown R2	6.15

AXLES

Ind.Harbor,Ind. S13	5.60
Johnstown,Pa. B2	5.60

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...	(16)4.00
Lackawanna,N.Y. B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

TOOL STEEL

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2		1.650
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025

W	Cr	V	Mo	
6.4	4.5	19.5	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel products include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Footnotes:
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(5) Philadelphia del.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 28 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill. lengths, to fabricators; to consumers, 5.60c.
(27) Bar mill sizes.
(28) Bandersized.
(29) Subject to 10% increase.
(30) Sheared: add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60"
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower. & narrower.
(40) Lighter than 0.035": 0.035" and heavier. 0.25c higher.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv., EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.
V2 Vanadium-Alloys Steel
V5 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

". . . free as a nation and financially independent as individuals."

OLIVER P. ECHOLS

Chairman of the Board, Northrop Aircraft, Inc.

"For nearly every American, systematic saving during productive years is the best means of insuring future security. We at Northrop Aircraft believe in the Payroll Savings Plan. We feel that bond purchases contribute greatly toward keeping us free as a nation and financially independent as individuals."

In addition to a deep, personal interest in his own company's Payroll Savings Plan, Mr. Echols is Chairman of the Aircraft Industry Committee to build employee participation in the Payroll Savings Plan.

- When Mr. Echols' Committee was formed, 17 major airframe manufacturers and 11 major suppliers, employing 400,000 workers, had a total of 80,000 employees enrolled in the Payroll Savings Plan.
- At Mr. Echols' request all 28 companies agreed to conduct person-to-person canvasses among their employees.
- The first companies to complete their canvasses report a total of more than 70,000 new Payroll Savers bringing the industry total to more than 150,000 participants.
- In the first reports on campaigns, average payroll participation (companies reporting) went from 20% to 32%. Latest indications are that the average participation—all 28 companies—will be well over 50% by the time the canvasses are completed.
- It is estimated that the 70,000 new Payroll Savers already added to the Plan through the co-operation of Mr. Echols and his Committee will purchase more than 15 million dollars worth of Series E Defense Bonds during the next twelve months.

Has *every* employee of your company been offered an opportunity to enroll in the Payroll Savings Plan? If not, phone, wire or write to Savings Bond Division, U. S. Treasury Department, Suite 700, Washington Building, D. C. Your State Director will help you conduct a person-to-person canvass.

Typical Companies Reporting Results of Person-to-Person Canvasses, Payroll Savings Plan.

	Before Canvass	After Canvass
Hughes Aircraft	38.7%	85.8%
Continental Motors	10%	70%
Boeing Aircraft	17.8%	55.1%
Rohr Aircraft	1.3%	77.6%
Solar Aircraft	1.8%	60.5%
Bell Aircraft	14%	50%

The U.S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

STEEL

The Weekly Magazine of Metalworking

STANDARD PIPE, T & C

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % —Black— A	B	C	—Galvanized— D	E	F
⅛	5.5c	0.24	34.0	32.0	...	+0.5	+2.5	...
¼	6.0	0.42	28.5	26.5	...	+3.5	+5.5	...
⅜	6.0	0.57	23.5	21.5	...	+10.0	+12.0	...
½	8.5	0.85	36.0	34.0	35.0	12.0	10.0	11.0
¾	11.5	1.18	39.0	37.0	38.0	16.0	14.0	15.0
1	17.0	1.68	41.5	39.5	40.5	19.5	17.5	18.5
1¼	23.0	2.28	42.0	40.0	41.0	20.5	18.5	19.5
1½	27.5	2.78	42.5	40.5	41.5	21.5	19.5	20.5
2	37	3.68	43.0	41.0	42.0	22.0	20.0	21.0
2½	58.5	5.82	43.5	41.5	42.5	23.0	21.0	22.0
3	76.5	7.62	43.5	41.5	42.5	23.0	21.0	22.0

Column A: Etna, Pa. N2 and 36½% on 3½", 4"; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜"; Wheatland, Pa. W9, 2 points lower on ⅛", ¼", ⅜". Following make ½" and larger: Lorain, O., N3; Youngstown R2 and 36¼% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5; Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., Y1; Alton, Ill., (Gary base) 2 points lower discount L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 4% on ⅛", plus 6% on ¼", plus 13% on ⅜" and 15.5% on 3½", 4"; Sharon, Pa. M6, plus 2.5 on ⅛", 1 point lower on ½", ¾", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3"; Wheatland, Pa. W9, add 2 points on ⅛", ¼", ⅜", 1 point lower on ¾", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½", 3". Etna, Pa. N2 and 15.5% on 3½", 4". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 15½% on 3½" and 4"; Youngstown Y1, Aliquippa, Pa. J5 quotes 1 point lower on ¾", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½" and 3".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Galv. B	Elec. Weld Black C	Galv. D
2	37.0c	3.68	29.5	8.0	29.5	8.0
2½	58.5	5.82	32.5	11.5	32.5	11.5
3	76.5	7.62	32.5	11.5	32.5	11.5
3½	92.0	9.20	34.5	13.5	34.5	13.5
4	$1.09	10.89	34.5	13.5	34.5	13.5
5	1.48	14.81	37.0	16.0	37.0	16.0
6	1.92	19.18	37.0	16.0	37.0	16.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6-in.; Lorain N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	—Seamless— H.R.	C.D.	Elec. Weld H.R.	C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1¾	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	13	24.35	29.82	24.50	28.84
2½	12	26.92	32.97	26.98	31.76
2½	12	29.65	36.32	29.57	34.76
2¾	12	32.11	39.33	31.33	36.84
3	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	—Plates— Carbon Base 10%	20%	—Strip— Cold-Rolled Carbon Base 10%	Both Sides	—Sheets— Carbon Base 10%	20%	Cu Base Both Sides
302 ...	....	....	....	....	19.75	26.24–27.50	77.00
304 ...	25.00	29.50	....	....	24.50	27.50–27.77	77.00
309 ...	30.50	35.00	....	....	....	....	....
310 ...	36.50	41.00	....	....	....	....	144.00
316 ...	29.50	34.00	....	....	26.00	35.92–36.50	....
317 ...	34.50	39.00	....	....	....	....	....
318 ...	33.50	38.00	....	....	....	....	....
321 ...	26.50	31.00–32.00	....	....	23.00	33.00	111.08
347 ...	27.50	32.00	....	....	24.00	33.50–33.83	130.00
405 ...	21.25	27.75	....	....	....	....	....
410 ...	20.75	27.25	....	....	....	....	....
Nickel	33.55	45.15	41.00	54.00	....	....	....
Inconel	41.23	54.18	....	....	....	....	165.00
Monel	34.93	46.28	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C 22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:

½-in. & smaller diam.	15
⅝-in. & ⅞-in.	18.5
1-in. and larger	17.5
Longer than 6 in.: All diams.	14
Lag bolts, all diams.: 6 in. and shorter	23
over 6 in. long	21
Ribbed Necked Carriage	18.5
Blank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire bolts	12
Boiler & Fitting-Up Bolts	31

NUTS

H.P. & C.P. Square:	Reg.	Hvy.
½-in. & smaller	15	15
⅝-in. & ⅞-in.	12	6.5
1-in.-1⅛-in.	9	1
1⅛-in. & larger	7.5	1
H.P. Hex.: ½-in. & smaller	26	22
⅝-in. & ⅞-in.	16.5	6.5
1-in.-1⅛-in.	12	2
1⅛-in. & larger	8.5	2
C.P. Hex.: ½-in. & smaller	26	22
⅝-in. & ⅞-in.	23	17.5
1-in. & 1⅛-in.	19.5	12
1⅛-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ⅞-in.	29.5	22
1-in.-1⅛-in.	24	15
1⅛-in. & larger	13	8.5
		Light
¼-in & smaller		35
⅜-in. to ⅝-in.		28.5
¾-in. to 1⅛-in.		26

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish .....48 & 10

Plated finishes .....31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged: per cent off list)

6 in. or shorter:

½-in. & smaller	42
⅝-in. through 1 in.	34
Longer than 6 in.: ⅝-in. & smaller	26
⅝-in. through 1 in.	4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger	16
N.F. thread, all diams.	10

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.85c

⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers—List to list-plus $1

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

—— Inches —— Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	38.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 sheet, except 303 and 309 E2.

Brackenridge, Pa., Sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416 501 and 502 and 34.25c on Type 301 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol 30.00-35.00

Toluol, one deg...26.00-33.00

Industrial xylol...25.00-33.50

Per ton bulk ovens

Sulphate of ammonia..$32-$45

Cents per pound, ovens

Phenol. 40 (carlots, non-returnable drums) ..17.25

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge iron Cents

98+% Fe, carlots.. 17.00

Swedish, c.l.f New York, in bags..8.85-9.95

Electrolytic iron:

Annealed, 99.5% Fe. 42.50

Unannealed (99 + % Fe) 36.50

Unannealed, 99 + % Fe (minus 325 mesh) 53.50

Powder Flakes 48.50

Carbonyl Iron:

97.9-99.8% size 5 to 10 microns..83.00-148.00

Aluminum:

Carlots, freight allowed 29.50

Atomized, 500 lb drums, freight allowed 32.50

Antimony 75.85

Brass, 20-ton lots..30.00-33.25

Bronze, 10-ton lots 51.25-60.00

Phosphor - Copper, 20-ton lots 50.00

Copper:

Electrolytic 37.25

Reduced 33.75

Lead 26.30

Magnesium 75.00-85.00

Manganese:

Minus 100-mesh 57.00

Minus 35 mesh 52.00

Minus 200 mesh 62.00

Nickel unannealed 86.00

Nickel-Silver 5-ton lots 45.00

Silicon 38.50

Solder (plus cost of metal) 8.50

Stainless Steel, 302 ... 83.00

Zinc, 10-ton lots..25.00-32.50

Tungsten Dollars

Melting grade, 99% 60 to 200 mesh:

1000 lb and over.... 6.00

Less than 1000 lb .. 6.15

98.8% minus 65 mesh:

1000 lb and over.... 4.15

Less than 1000 lb... 4.25

Molybdenum:

99.9%, minus 200 mesh 3.24

Chromium, electrolytic 99% Cr min. 3.50

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

Connellsvil.fur. .$14.50-15.00

Connellsvil.fdy. .17.00-18.00

New River foundry... 21.30

Wise county, foundry.. 15.95

Wise county, furnace. 15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens..$22.75

Everett, Mass., ovens New England, del...*24.80

Chicago ovens 23.00

Chicago, del. 24.50

Terre Haute, ovens.... 22.50

Milwaukee, ovens 23.75

Indianapolis, ovens 22.75

Chicago, del. 26.42

Cincinnati, del. 25.85

Detroit, del. 26.85

Ironton, O., ovens 22.50

Cincinnati, del. 25.12

Painesville, O., ovens..24.00

Cleveland, del. 25.82

Erie, Pa., ovens 23.50

Birmingham, ovens .. 20.30

Birmingham, del. .. 21.60

Philadelphia, ovens ... 22.70

NevilleIsland,Pa.,ovens 23.00

Swedeland, Pa., ovens. 22.60

St. Louis, ovens

St. Louis, del. 25.40

Portsmouth, O., ovens 22.50

Cincinnati, del. ....? 25.12

Detroit, ovens 24.00

Detroit, del. 25.00

Buffalo, del. 26.39

Flint, del. 26.59

Pontiac, del. 25.47

Saginaw, del. 26.92

* Or within $4.55 freight zone from works.

Shock Test proves Dings new Lifting Magnet CAN TAKE IT!

PARKS IRON AND METAL COMPANY • 2755 SOUTH 34TH STREET • MILWAUKEE 15, WISCONSIN • MITCHELL 5-5535-5536

Dings Magnetic Separator Co.

Gentlemen:

...your 39" diameter lifting magnet handled our job even beyond our highest expectations.

This magnet received the roughest possible treatment for a period of six months, demolishing the gas plant in the city of Sheboygan, Wisconsin. The magnet saw daily service as a battering ram in this work plus the usual service of lifting the material and loading trucks.

We are happy to recommend your lifting magnet and assure you our next will without question be a "Dings".

Our thanks to you for producing a lifting magnet which answers the many rough handling problems confronting users today.

Yours sincerely,
PARKS IRON & METAL COMPANY
Stanley Parks

"ROUGHEST possible treatment for 6 months," says Parks Iron & Metal (right).... Users have been impressed with the way the Dings all-welded lifting magnet hoists a full load *all* day right up to quitting time. THAT'S BECAUSE it's cooler operating. NOW some really rugged assignments like the one at right have proven this magnet is thick skinned as well as muscled. Yet it's light. THAT'S BECAUSE the magnet is heavily reinforced *where it counts.*

Here, then, is a testimonial that any handler of metals can translate into his own profit story. Let your nearest Dings Representative give you details. Or write for the new lifting magnet bulletin —today,

DINGS MAGNETIC SEPARATOR CO.
4710 W. Electric Ave., Milwaukee 46, Wisconsin

Deliveries Are Still Good!

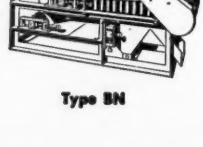
Associate Member,
Institute of Scrap Iron & Steel Inc.

DINGS MAGNETS

SCRAP SEPARATORS:

Electric and Non-Electric Pulleys

Non-Electric Drums



Type BN

Type MA

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140‡§		Carbon	Floor
New York (city)	6.28	7.24	8.54	6.50	...	6.52	7.33	9.29	6.38	6.76	8.01
JerseyCity(c'try)	6.09	6.94	8.27	6.36	...	6.22	7.03	8.99	6.08	6.46	7.71
Boston (city) ..	6.40	7.20	8.63	6.32	...	6.25	7.24	10.80	6.40	6.60	7.84
Boston (c'try) .	6.20	7.00	8.43	6.12	...	6.05	7.04	10.60	6.20	6.40	7.64
Phila. (city) ..	6.04	6.97	8.35	6.29	7.11	6.29	7.16	10.48	6.10	6.38	7.29
Phila. (c'try) .	5.79	6.72	8.10	6.04	6.86	6.04	6.91	10.23	5.85	6.13	7.04
Balt. (city) ..	5.74	7.00	8.40	6.23	...	6.21	6.83	...	6.33	6.33	7.57
Balt. (c'try) ..	5.54	6.80	8.20	6.03	...	6.01	6.63	...	6.13	6.13	7.37
Norfolk, Va. ..	6.78	...	...	...	...	6.04	7.30	...	6.30	6.30	7.15
Richmond, Va..	5.74	6.57	8.38	6.14	...	5.91	6.59	...	6.72	6.86	8.00
Wash. (w'hse) .	6.05	7.26	8.49	6.50	...	6.50	7.26	...	6.60	6.65	7.86
Buffalo (del.)..	5.74	6.52	8.46	6.06	...	5.72	6.65	10.72††	6.02	6.18	7.55
Buffalo (w'hse).	5.54	6.32	8.26	5.86	...	5.52	6.45	10.52††	5.82	5.98	7.35
Pitts. (w'hse) .	5.54	6.32	8.25	5.84	6.90	5.47	6.40	10.10††	5.65	5.70	6.69
Detroit (w'hse).	5.74	6.49	8.55	5.78	7.15	5.76	6.60	10.37††	6.12	6.17	7.23
Cleveland (del.)	5.74	6.52	8.18	5.85	7.14	5.81	6.60	10.41††	6.18	6.02	7.43
Cleve. (w'hse) .	5.54	6.32	7.98	5.65	6.94	5.61	6.40	10.21††	5.98	5.82	7.23
Cincin. (w'hse).	5.87	6.39	8.32	5.79	...	5.77	6.66	10.52††	6.12	6.17	7.31
Chicago (city) .	5.74	6.52	8.05	5.69	...	5.67	6.50	10.30††	5.85	5.90	7.09
Chicago (w'hse)	5.54	6.32	7.85	5.49	...	5.47	6.30	10.10††	5.65	5.70	6.89
Milwau. (city) .	5.91	...	8.22	5.86	...	5.84	6.77	10.37††	6.02	6.07	7.26
Milwau. (c'try)	5.71	...	8.02	5.66	...	5.64	6.57	10.17††	5.82	5.87	7.06
St. Louis (del.)	6.04	6.82	8.35	5.99	...	5.97	6.90	10.60††	6.25	6.30	7.49
St. L. (w'hse) .	5.84	6.62	8.15	5.79	...	5.77	6.70	10.40††	6.05	6.10	7.29
Kans. City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
Kans.City(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Birm'hm (city).	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.23
Birm'hm(w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city)	6.50	8.30[2]	9.50	6.60	10.65	6.45	8.35	11.50††	6.50	6.50	8.75
L. A. (w'hse)..	6.30	8.10[2]	9.30	6.40	10.45	6.25	8.15	11.30††	6.30	6.30	8.55
Seattle-Tacoma.	7.01	9.18	9.65	7.55	...	6.80	9.14	10.35	6.57	6.95	8.73
SanFran.(w'hse)	6.44	7.88[2]	9.25[2]	6.45	...	6.41	8.20	11.30	6.25	6.38	8.45

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; •• 16 gauge; †† as annealed; §§ 15 gage. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [4]—3500 lb and over; [5]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore
(1951 contract prices; 1952 prices not established)

Gross ton, 51½% (natural), lower lake ports. After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

Eastern Local Ore
Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Ore
Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	$20.00-24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	30.00-31.00

Tungsten Ore
Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 25:1 lump	nom.
Rhodesian	
45% no ratio	$29.00
48% no ratio	31.50-32.00
48% 3:1 lump	50.00-51.00
Domestic—rail nearest seller	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 21.75c per lb of contained Cr c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, and 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.03% C 33.60c per lb of contained Cr, 0.04% C 31.50c, 0.06% C 30.50c, 0.10% C 30.00c, 0.15% C 29.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% C 29.00c, 1.50% C 28.85c, 2% C 28.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 23.25c per lb of contained Cr. C.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8M x D, 16.35c per lb of alloy; ton lot 17.2c; less ton lot, 18.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 21.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: Min 97% Cr and 1% Fe) Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium ton lot $1.10, less ton $1.12. Delivered. Spot, add 5c.

SILICON ALLOYS

25.30% Ferrosilicon: Contract, carload, lump, bulk, 20.00c per lb of contained Si; packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

Note: Current prices on zirconium, calcium and briquetted alloys appeared on page 175, June 2 issue; manganese, titanium and "other" ferroalloys, page 159, May 26. Refractories prices were published on page 175, June 2.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max) Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.5c per lb of contained Si, carload packed 18.7c, ton lot 19.65c, less ton 20.7c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe). C.l. lump, bulk, regular 20.0c per lb of Si, c.l. packed 21.2c, ton lot 22.1c, less ton 23.1c. Add 1.5c for max, 0.10% calcium grade. Deduct 0.4c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12 % max, C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

TUNGSTEN ALLOYS*

Ferrotungsten: (70-80%). 10,000 lb W or more, $5.00 per lb of contained W; 2000 lb W to 10,000 lb W, $5.10; less than 2000 lb W, $5.22.

Tungsten Powder: Carbon Reduced; (W 98.8% min) 1000 lb or more, $6.00 per lb of contained W, less than 1000 lb W, $6.15.

* Government ceiling prices, effective May 7, 1951, f.o.b Niagara Falls, N. Y., basis.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

June 5	$43.00
May 29	43.00
May 1952	43.00
June, 1951	44.00
June, 1947	32.48

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin..

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	— 10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00

Cut Structurals & Plate:

16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base

Foundry, Steel:

20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for Grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purpose.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches.	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under.	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3 oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Price established for Grade 15 may be charged only when purchased and sold for rerolling uses; otherwise, ceiling shall not exceed that for Grade 14.

(2) Price established for Grade 30 may be charged only when sold to a producer of wrought iron; otherwise, ceiling shall not exceed that for No. 1 heavy melting steel.

(3) Price for Grade 25 may be charged only when sold for rerolling and forging purposes; otherwise, ceiling shall not exceed that for base grade (No. 1).

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross tons which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.

For preparing into:

(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

Premium for Alloy Content

No premium may be charged for alloy content except: $1.25 per ton for each 0.25% of nickel where scrap contains not less than 1% and not over 5.25% nickel; $2 per ton for scrap containing not less than 0.15 per cent molybdenum and $3 for scrap containing not less than 0.65% molybdenum; for scrap containing not less than 10% manganese, $4 for scrap in sizes larger than 12 x 24 x 8 in., and $14 for scrap cut in that size or smaller (applicable only if scrap is sold for electric furnace uses or on NPA allocation); $1 for scrap conforming to SAE 52100.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop Broken Machinery	52.00

Restrictions on Use

(1) Ceiling shipping point price which a basic open-hearth consumer may pay for No. 1 cast iron, clean auto cast, malleable or drop broken machinery cast shall be ceiling price for No. 2 charging box cast.

OPEN MARKET PRICES

Birmingham
(Delivered)

No. 1 cupola cast	$42.00-43.00
Stove plate	38.00-39.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	34.00
Heavy breakable	32.00
Stove plate	32.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 cupola cast	42.00
Machine shop turnings	26.00
Short shoveling turnings	31.00
Cast iron borings	31.00

Chicago
(Delivered)

Machine shop turnings	30.50
Mixed borings, turnings	34.50
Shoveling turnings	34.50
Cast iron borings	34.50
No. 1 cupola cast	43.00-47.00
Charging box cast	39.00-41.00
Heavy breakable	36.00-38.00
Burnt cast	36.00-38.00
Cast iron brake shoes	40.00-41.00
Stove plate	36.00-41.00
Clean auto cast	43.00-45.00
Unstripped motor blocks	33.00-35.00
Malleable	48.00-50.00
Drop broken machinery	45.00-50.00

Cleveland
(Delivered)

No. 1 cupola cast	44.00

Detroit
(Brokers' buying prices; f.o.b. shipping point)

Machine shop turnings	24.00-25.00
No. 1 cupola cast	43.00-44.00
Heavy breakable	39.00
Clean auto cast	46.00-47.00
Unstripped motor blocks	36.00-37.00
Drop broken machinery	46.00-47.00
Stove plate	42.00-43.00
Charging box cast	43.00

New York
(Brokers' buying prices; delivered consumers' plants)

Cupola cast	38.00
Unstripped motor blocks	34.00

Philadelphia
(Delivered)

No. 1 cupola cast	38.00-39.00
Unstripped motor blocks	35.00
Heavy breakable	42.00

Pittsburgh
(Delivered)

No. 1 cupola cast	46.00
Heavy breakable	45.00
Charging box cast	47.00

San Francisco
(Delivered)

No. 2 bundles	30.00
No. 1 cupola cast	41.00

Seattle
(F.o.b. shipping point)

No. 2 bundles	29.00
No. 1 cupola cast	44.00
Heavy breakable	40.00

St. Louis
(Delivered)

No. 1 cupola	41.00
Stove plate	39.00
Unstripped motor blocks	35.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt	$35.00
No. 1 Bundles	35.00
No. 2 Bundles	35.00
Mechanical Bundles	31.50
Mixed Steel Scrap	31.00
Mixed Borings, Turnings	32.00
Rails, Remelting	35.00
Rails, Rerolling	38.00
Busheling	29.50
Bushelings new fractory:	
Prep'd	33.00
Unprep'd	31.00
Short Steel Turnings	32.00
Cast Iron Grades*	
No. 1 Machinery Cast	50.00

* F.O.B. shipping point.

Cancer strikes one in five

Strike back

Your Dollars *will save lives by strengthening the Cancer Crusade of the American Cancer Society.*

Your Dollars *will bring words of truth and hope to you, to your family, to your friends and to your community.*

Your Dollars *will help ease the pain of the cancer patient.*

Your Dollars *will train skilled, understanding hands and minds to serve in the hospital, in the doctor's office, perhaps even in your home.*

Your Dollars *will speed the march of research toward mastery over cancer, the disease that last year killed 215,000 men, women and children.*

Give to conquer Cancer

AMERICAN CANCER SOCIETY

GENTLEMEN:

☐ PLEASE SEND ME FREE LITERATURE ABOUT CANCER.

☐ ENCLOSED IS MY CONTRIBUTION OF $.....TO THE CANCER CRUSADE.

Name.....

Address.....

City.....State.....

American Cancer Society

Mail the coupon to "Cancer" C/O your local Post Office

every grade of ZINC

for urgent military and

civilian requirements

SLAB ZINC

PRIME WESTERN

SELECT

BRASS SPECIAL

INTERMEDIATE

HIGH GRADE

SPECIAL HIGH GRADE

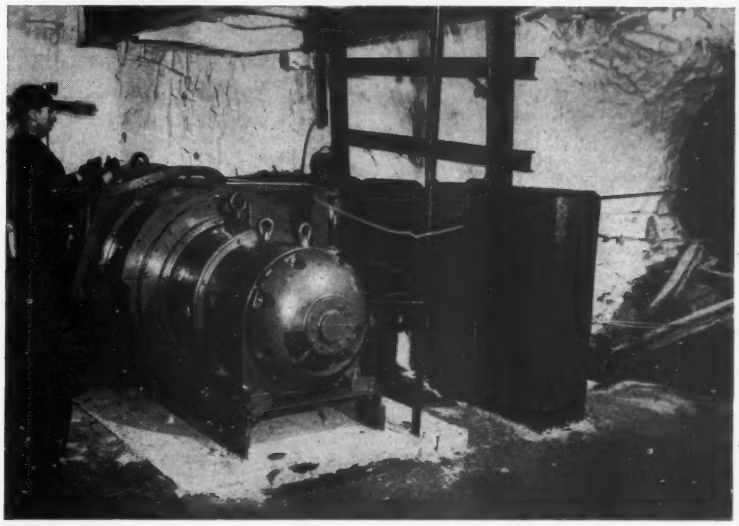
AMERICAN ZINC SALES COMPANY

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

The Metal Market



Gravity is the key to recovery of bonus tonnage of nickel-copper ore at International Nickel Co. mines in the Sudbury district of Ontario. Inco engineers adopted the induced caving method by which masses of low grade ore disintegrate of their own weight after high grade ore below it is mined out. In another bulk mining technique, blasthole mining, rings of holes up to 75 feet long are drilled in ore and blasted simultaneously, breaking off up to 60,000 tons of ore. A typical setup for longhole drilling with tungsten carbide tipped bits is shown at right. New underground techniques (five mining methods are used at Sudbury) require much specialized equipment. One example: More than 150 of the 125-horsepower slusher hoists and scrapers shown at left were needed to drag ore from stopes of new mining areas to openings leading to cars

Day of normalcy in most major metals looks to be nearer. There's encouragement even in those regarded as the most critically short. Zinc, scarce not long ago, drops in price

GLOOMY BUSINESS predictions, uncertain supply, labor troubles and price fluctuations fail to dampen appreciably industry's anticipation of a return to normal by major metals.

Consensus is that with industry managing its own buying, selling and production scheduling functions, companies can effectively meet abnormal problems through individual initiative. Chances are that the turning point in supply of even the metals regarded as critical today is closer than officially forecast.

Lead Balloon—That contention can be supported by the striking reversals in lead, zinc and cadmium, and by softening in demand and price for many other metals. There's even more cheer in the copper and nickel situations.

Last week saw the zinc price drop below the government ceiling. Prime Western was reduced 3.5 cents to 16 cents East St. Louis. This decline made zinc the second of the major nonferrous metals to slide below the government ceiling. Lead was the first.

A break is due in the foreign copper buying reluctance. With or without OPS-NPA clarification of nearly-hopeless regulations, someone's bound to place orders for Chilean copper soon—probably at about 35 cents. After the initial rush, the price should weaken. Some observers think that even 30 cents will be too high.

Copper scrap today is plentiful. It's in better position than at any time in the last two years.

Nickel Improves — The International Materials Conference, discovering an unexpected nickel production increase abroad, will make supplementary distribution this summer. International Nickel Co. says its costs are going up and it may have to restudy the price situation.

Brass and Bronze: Brighter

"Brass and bronze products delivery is nearer to normal than we have experienced for a long time." So says W. B. Burnet, Imperial Brass Mfg. Co., Chicago, a member of the Market Report Committee of the National Association of Purchasing Agents.

Delivery of brass and bronze tubular goods now takes from four to eight weeks, depending on type and wall thickness.

You can get brass and bronze sheets in four to six weeks.

Brass rod is offered for four to eight weeks' delivery on larger sizes. On sizes ⅝-inch and under, some mills are offering three months.

Needed: Aluminum Business

Third-quarter bookings for aluminum products are "dangerously low," say industry leaders. They declare business soft and metal supplies ample. Current backlog is less than the three weeks considered normal for the industry. One producer reports cancellations of ingot, sheet, rod and extrusion orders for June. Independent extruders haven't found enough rated business to fill their authorized production schedules. Relaxation in aircraft forgings is noticeable since the defense stretch-out; stocks and capacity available are in good shape. Foil companies are filling their space but not far ahead, as customers appear to have considerable inventory.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 16.00c; brass special 16.25c; intermediate 16.50c, East St. Louis; high grade 17.35c, delivered.

Lead: Common 14.80c; chemical 14.90c; corroding 14.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 18.50c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 39.00c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 39.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $198-$201 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.25 del.; special or patented shapes $2.40.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 82.75c per oz.

Platinum: $102-$105 per ounce from refineries.

Palladium: $25 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective Aug. 23, 1951)

Sheet: Copper 41.68; yellow brass 38.28; commercial bronze, 95% 41.61; 90% 41.13; red brass, 85% 40.14; 80% 39.67; best quality, 39.15; nickel silver, 18%, 53.14; phosphor-bronze grade A, 5%, 61.07.

Rod: Copper, hot-rolled 37.53, cold-drawn 38.78; yellow brass free cutting, 32.63; commercial bronze 95%, 41.30; 90% 40.82; red brass 85%, 39.83; 80%, 39.36.

Seamless Tubing: Copper 41.72; yellow brass 41.29; commercial bronze, 90%, 43.79; red brass, 85%, 43.05.

Wire: Yellow brass 38.57; commercial bronze, 95%, 41.90; 90%, 41.42; red brass, 85%, 40.43; 80%, 39.96; best quality brass, 39.44.

(Base prices, effective Dec. 26, 1951)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 28.545; 30,000 lb lots, 28.67; l.c.l., 29.17. Weatherproof, 100,000 lb, 30.35; 30,000 lb, 30.60; l.c.l., 31.10. Magnet wire del., 15,000 lb or more, 34.50; l.c.l., 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4 17S-T4	R-317-T4	——Hexagonal—— 17S-T4
0.125	52.0	....	....
0.156-0.0188	44.0	....	....
0.219-0.313	41.5	....	....
0.375	40.0	46.0	48.0
0.406	40.0	....	....
0.438	40.0	46.0	48.0
0.469	40.0	....	....
0.500	40.0	46.0	48.0
0.531	40.0	....	....
0.563	40.0	....	45.0
0.594	40.0	....	....
0.625	40.0	43.5	45.0
0.688	40.0	....	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	....	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	....	....
1.625	36.5	....	39.5
1.688-2.000	36.5	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $20.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils $20.00 per cwt. Traps and bends: List prices plus 50%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 21.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 22.00-23.00c; over 12-in., 22.00-23.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
June 5	24.50	14.80	16.00	121.50	19.00	39.00	56.50	82.75
June 2-4	24.50	14.80	17.50	121.50	19.00	39.00	56.50	82.75
May 28-31	24.50	14.80	19.50	121.50	19.00	39.00	56.50	82.75
May 20-27	24.50	14.80	19.50	121.50	19.00	39.00	56.50	84.00
May 16-19	24.50	14.80	19.50	121.50	19.00	44.00	56.50	84.00
May 15	24.50	14.80	19.50	121.50	19.00	44.00	56.50	85.00
May 13-14	24.50	14.80	19.50	121.50	19.00	44.00	56.50	86.00
May 12	24.50	14.80	19.50	121.50	19.00	44.00	56.50	87.00
May 6-10	24.50	16.80	19.50	121.50	19.00	44.00	56.50	87.00
May 2-5	24.50	16.80	19.50	121.50	19.00	44.00	56.50	88.00
May Avg.	24.50	15.519	19.50	121.50	19.00	42.077	56.50	85.356
Apr. Avg.	24.50	18.723	19.50	121.50	19.00	49.077	56.50	88.00
Mar. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Feb. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Jan. Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads, 28.00c; 5 tons and over 28.50c; 1 to 5 tons, 29.00c; less than 1 ton 29.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb, 75.50c; 3000 to 10,000 lb, 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 400 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 400 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.375; 500 to 999 lb, $1.38; 200 to 499 lb, $1.385; less than 200 lb, $1.40. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material.

Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50; Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 11.00-11.25; battery plates 6.50-6.75; linotype and stereotype 12.50-13.00; electrotype 11.00-11.50; mixed babbitt 14.50-14.75.

Smelters' Buying Prices

(Cents per pound, New York, in ton lots)

Zinc: Old zinc, 9.00; new die cast scrap, 8.00; old die cast scrap, 8.00.

Wire . . .

Wire Price, Page 159

Boston—Mild flurry in late second-quarter buying for prompt delivery subsided to slow pace for third quarter. For most finished wire products there were liberal openings next quarter. Spring wire for the bedding industry perked up slightly; rope orders were fairly numerous but small individually except for scattered military orders. Nail wire demand was slow and consumers of heading wire had cut back buying volume about two-thirds of allotments, holding up some tickets. Rod supply is plentiful and converter inventories are in balance. Converter directive has been discontinued and most consumers in this category are given regular CMP allotments.

Sheets, Strip . . .

Sheet and Strip Prices, Page 157 & 158

Cleveland—Complete shutdown of the rolling mills in this district as result of the strike will tighten sheet supplies over coming months, depending on the length of the shutdown. Consumers, as a general thing, have sufficient inventory to carry them for 30 days or so. However, with the mills booked solidly through third quarter, the current shutdown will add to the difficulty of obtaining tonnage for that period since the carryover from second quarter necessarily will displace already scheduled third quarter tonnage. Actually, should the strike extend three weeks or more the mills will be forced to carry over a large tonnage from third quarter into the fourth period. Indications are the mills will decline to accept additional new business should it appear certain the strike will be prolonged. Usual practice is to turn back to customers new orders for those products for which fairly reasonable delivery assurances can not be given. In only a few sheet specialties can the mills accept much additional tonnage, it is understood.

Galvanized sheet coating extras were reduced last week in conformity with the reduction in zinc price from 19.50c to 16.00c E. St. Louis. No change in base prices is involved. The reduction is in line with published schedules.

New York—What easiness there may have been in the major grades of sheets and strip faded entirely with the latest walkout in steel. Much depends upon how long the strike lasts, but most sellers were already booked up throughout third quarter on hot and cold and galvanized sheets before the strike began.

Philadelphia—District sheet consumers should be able to maintain fairly high operations for a few weeks. Actually the squeeze should be felt first at manufacturing plants through shortage of other products, notably bars. Certain manufacturers of appliances are so up against it in moving their products they could coast along at their present reduced rate of operations for quite a while.

Pittsburgh—Despite the shutdown of the mills here in the nation-wide steel strike, most sellers, as a general thing, are continuing to book orders in regular manner. Indications are if the strike is prolonged district sales offices will be instructed to turn back orders to customers since it will be impossible to make firm commitments. Meanwhile, there is a surprising lack of apprehension over supplies among consumers. Generally, users' stocks appear to be adequate to support operations for several weeks, it being estimated that inventories average about 30 days. In a few instances, difficulty may be encountered by fabricators but so far there are no signs that distress will be in evidence for a couple weeks.

Chicago—Most sheet users are believed to have close to three weeks' inventory and the present interruption in shipments from mills is being accepted in stride. All sheet production in this district is at a complete standstill.

St. Louis—Granite City Steel Co.'s strike curtailment last week found deliveries of cold-rolled sheets seven weeks behind schedule and demand strong .

Los Angeles—Mills were offering more flat-rolled steel than fabricators had tickets for. Consequently, books for the third quarter were filling slowly.

Steel Bars . . .

Bar Prices, Page 157

Philadelphia—The steel strike undoubtedly will push considerable third quarter tonnage in hot carbon bars into fourth quarter. Virtually all producers were solidly booked for the third period when the strike began. Consumer stocks of carbon bars are perhaps lightest of all the major products, although they may average a month's requirements.

New York—Recent government action in increasing third-quarter allotments by 10 per cent provided little hope among hot carbon bar consumers that their supply would be increased, for most producers already were oversold for that period. Now with the steel strike, what hope they did have has disappeared, although much will depend on just how long the strike lasts.

Pittsburgh—Shutdown of the mills in the steel strike will further tighten acute steel bar supply conditions. Producers are sold out for third quarter and many CMP tickets still are unhonored. The current cutting off of production will add to the carryover into third quarter.

Cleveland—Tight supply conditions in the bar market will be intensified by the loss of production as result of the strike regardless whether the walkout is shortlived or prolonged. This is especially true with respect to the larger sizes which have been acutely short. The mills were booked solidly through third quarter before the steel walkout and not only will added lost production increase the carryover tonnage into third quarter, but actual output of bars may be adversely affected when the mills get back into operation by the loss of semifinished steel during the walkout.

Chicago—Mills which are unaffected by the steel strike report only minor new inquiry for bars. Explanation is that users are well aware that schedules are filled for this quarter and next, and no tonnage could be expected for quick delivery.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 157

Boston—Concrete reinforcing bar distributors are committed ahead one year or more on larger tonnages required for bridges. Any prolonged halt in flow of steel will delay these projects.

Los Angeles—Demand for reinforcing material from priority projects is stronger but supplies are adequate.

Seattle—Backlogs of orders for reinforcing bars declined in the last month. Tacoma opened bids this week for 1200 tons for a light department structure.

Structural Shapes . . .

Structural Shape Prices, Page 157

Philadelphia—Structural steel market here has been dragging for some time past. Hence, the adverse effect of the steel strike on local demand is not too pronounced. However, the walkout has extended to some larger fabricating shops, and has cut down drastically on inquiry from outside the district. The shops of the country's two largest fabricators have been generally struck, except for the Elmira, N. Y., plant of American Bridge Co., which has an AFL union. Most shops, which are not struck, will be able to carry on at present operating rates for three weeks or so. Some plants, which have no labor trouble of their own in prospect have fair inventories, but may wish to conserve them so that there will be no undue delay in getting under way again once the steel walkout is ended. Only one eastern shape mill is operating, that at Phoenixville, Pa. The bridge shop there also is in production. NPA says relaxation of restrictions on commercial construction may have to be abandoned if the strike is prolonged.

Boston—Only 3650 tons of structurals remain to be ordered for the Fitzgerald expressway, Boston, readvertised June 10. Contracts have been placed for 20,000 tons with three fabricators; Bethlehem Steel Co. took 11,650 tons. Bridge tonnage estimating is down, but substantial amount is ahead; also a considerable volume for electrical power plants is expected. Schools and public works account for fair volume to district shops; backlogs are lower and competition brings out slightly easier prices.

New York—Fabricators say that should the steel strike be prolonged they would start curtailing their operations within two or three weeks and then shortly thereafter probably suspend entirely.

Pittsburgh—Structural shape requirements will be a little more pressing on the market in the last half of the year than had been expected as result of the production loss stemming from the closing down of the mills in the steel strike. Recently, increasing signs of easing supply conditions have been in evidence with demand noticeably spotty. Carryover from second to third quarter now will be larger than anticipated and some sellers think they will be under greater pressure right to the end of the year should the current plant shutdown be extended.

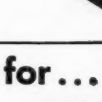
NOW! An ABRASIVE BLADE

VIRTUALLY UNBREAKABLE!

FOR THOSE "TOUGH" CUTTING JOBS

Clipper® "SAILS RIGHT THRU" "CBR" (BREAK-RESISTANT) **BLADES**

for...



MASONRY SAWS

HAND POWER SAWS

FLEXIBLE SHAFT SAWS

BEND—DROP—or TWIST in the cut . . . they're Virtually Unbreakable! Yes, Clipper "CBR" Blades are STRONG and SAFE and even more surprising the blade life is 50% to 100% longer than regular blades. It is not recommended for hard vitreous materials but rather the softer ranges of masonry. The most intricate cutting or grooving is now possible on Hand-Power Saws or Masonry Saws. Write today for prices and recommendations on this newest Dry Abrasive blade. Available in all diameters, arbor shapes and sizes.

DIAMOND and ABRASIVE BLADES for Any MASONRY or CONCRETE CUTTING

There's a Clipper Blade to cut your Brick, Glazed Tile, Fire Brick, Concrete block and Floors, Natural Stone, Glass and Porcelain. Available in sizes from 6" to 30". Choose Genuine Clipper for the FASTEST — CHEAPEST and LONGEST LASTING masonry cutting.

FREE ILLUSTRATED LITERATURE AND PRICES

Clipper

KANSAS CITY 8, MISSOURI

ST. LOUIS, CLEVELAND, DETROIT, CINCINNATI, HOUSTON, AUSTIN, TEX., PHILADELPHIA, PITTSBURGH, SAN FRANCISCO, LOS ANGELES, CHICAGO, NEW YORK, ATLANTA, WASHINGTON, D.C., BOSTON, BIRMINGHAM, ST. PAUL, INDIANAPOLIS

SERVING THE WORLD AS THE WORLD'S LARGEST MANUFACTURER OF MASONRY SAWS

SOLD DIRECT FROM FACTORY BRANCHES

CLIPPER MANUFACTURING CO.
2827 WARWICK • KANSAS CITY 8, MO.
SEND FREE LITERATURE AND PRICES ON: 92

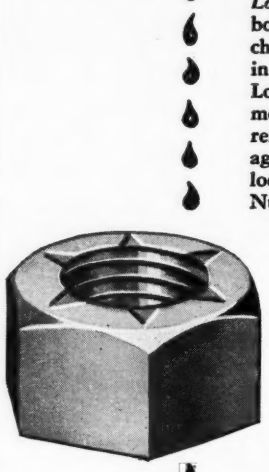
☐ "C B R" BLADES ☐ MASONRY SAWS
☐ ABRASIVE BLADES ☐ CONCRETE SAWS
☐ DIAMOND BLADES ☐ CONVERTIBLE SAWS

NAME _____
STREET _____
CITY _____ STATE _____

DEFY

oil and chemicals

The patented Double Triangle deflected nut threads make GRIPCO *Lock Nuts* lock tight onto the bolt, in spite of oil, water or chemicals. Even if they're soaked in oil, they'll still hold! GRIPCO Lock Nuts stay locked until removed with a wrench, and can be removed and reapplied again and again, without appreciable loss of locking effectiveness. GRIPCO Lock Nuts go on *fast* and stay *fast!*



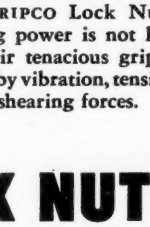
beat vibration, too

On applications where vibration is a factor, follow the example of leading manufacturers and standardize on GRIPCO Lock Nuts. Their locking power is not lessened and their tenacious grip is not loosened by vibration, tension, pressure and shearing forces.

GRIPCO LOCK NUTS

5964

GRIPCO PILOT PROJECTION WELD NUTS
A production speeder. Pilot positions nut quickly and accurately and it is instantly attached by resistance welding.



GRIPCO COUNTERSINK WELD NUTS
Through countersink design, loose metal particles are shunted away from threads. No rethreading necessary.

Samples and prices on request. Specify type nut, thread and size.

GRIP **NUT COMPANY**
308-N S. Michigan Ave. Chicago, Ill.

Plates . . .

Plate Prices, Page 157

New York—At least two eastern plate mills, Alan Wood and Central Iron & Steel, are likely to survive any early effects of the general steel strike, due to contracts signed early in April. The latest disturbance came at a time when demand for sheared plate continued active, especially in the heavier gages and when all producers, except for the very high premium producers, were able to accept all the third-quarter tonnage they desired.

Boston—Demand for heavy and wide plates is substantial, notably for weldments, but pressure for delivery was easing slightly before the steel strike. Narrow strip plates were in balance with demand and small tank shops have balanced inventories. Boiler shops are operating below capacity in most cases and business with miscellaneous fabricators is more competitive.

Philadelphia—With only two plate mills in the district operating, stringency in this product is pronounced. Most sheared plate producers were virtually booked up for the third quarter before the strike. One possible exception is a high premium mill which continues in operation.

Pittsburgh—It is still too early in the strike to determine to what extent the plate market will tighten up further supplywise. While heavy plates are acutely scarce, the lighter gages have been in increasingly easy supply in recent weeks. View in the trade is light plate supply will tighten noticeably over the last half of the year should the steel strike be prolonged several weeks.

Seattle—Plate fabricators reported little inquiry, although some penstocks for government dams in Washington and Idaho are still unplaced.

Pig Iron . . .

Pig Iron Prices, Page 156

Cleveland—Severe shortage of pig iron is expected this summer in event the current steel strike is prolonged. While pressure for merchant iron was off noticeably in recent weeks due to the lag in foundry operations, there was no surplus of iron in the district, the furnaces being able to dispose of their entire output. Some foundries took advantage of the easier supply situation and added to their inventories, but, generally, consumer stocks are not large and extensive loss of pig iron production will be felt within a few weeks. Some inquiry has been coming to this district from the Detroit area reflecting the cutting off of iron supplies from the Toledo furnaces which have been strikebound for almost two months. All blast furnaces in the immediate Cleveland area are banked in the current strike. All 10 had been operating prior to the walkout.

Pittsburgh—Merchant iron supply has been noticeably tight here in recent weeks and the current shutdown of blast furnaces as result of the steel strike will intensify this condition over coming months. Considerable inquiry has been coming to this district from outside points as result of the prolonged strike at the blast furnaces in Toledo, O. How-

"KRANE KAR* MANEUVERABILITY IS VALUABLE," SAYS KROPP FORGE

Handles Loads at Either Side as well as in Front

"EXTREME MANEUVERABILITY IS VALUABLE for getting in and out between closely piled stacks of bars and billets . . . . and for moving bars and billets through low shop doors," says a letter from Kropp Forge.

KRANE KAR is used in the Storage Yard for unloading, storage, and for handling heavy forge hammer repair parts, loaded tote boxes, miscellaneous work. Quoting further, "Single billets of 15,000 pounds are handled easily. Up to a quarter-million pounds of steel are moved in an 8-hour day with average fuel consumption cost of $1.50."

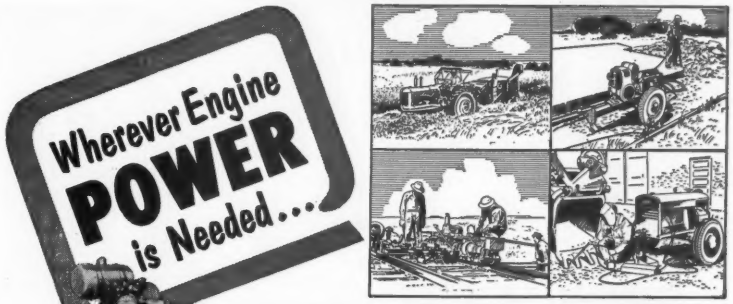
Only KRANE KAR can perform such difficult Materials-Handling operations ECONOMICALLY . . . . 1—transports full rated load without stabilizers; 2—tops and lowers boom by power; 3—load is lowered by power; 4—automatic crane braking; 5—unobstructed vision all around; 6—short turning radius; 7—gas-powered KRANE KAR works 24 hours a day!

Ask for BULL. #89, entitled "How to Cut Materials-Handling Costs."

1½, 2½, 5 and 10 ton cap.

*The original Swing-Boom Mobile Crane with Front-Wheel Drive and Rear-Wheel Steer.

SILENT HOIST & CRANE CO. 849 63rd ST., BROOKLYN 20, N.Y.



WISCONSIN Air-Cooled ENGINES

Fit the Job and the Machine

Because Wisconsin Air-Cooled Engines are supplied in a complete power range, from 3 to 30 H.P., in 4-cycle single cylinder, 2- and 4-cylinder types, there is an ideal size to fit all types of machines and power applications within this range, without wasted power and with maximum power service benefits. Heavy-duty construction, combined with extremely compact design and light weight are added advantages—and dependable AIR-COOLING permits trouble-free service under all climatic conditions.

Single cyl. 3 to 9 H.P.

2-cylinder 7 to 13 H.P.

V-type 4-cyl. 15 to 30 H.P.

Specify Wisconsin Heavy-Duty Air-Cooled Engines for the utmost in power satisfaction. Write for descriptive data.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

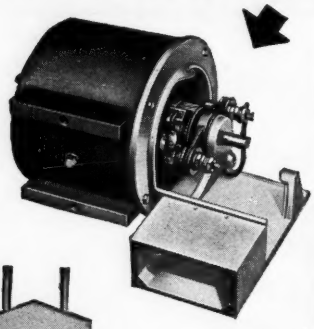
Have a Job Too Tough for a Standard Motor?

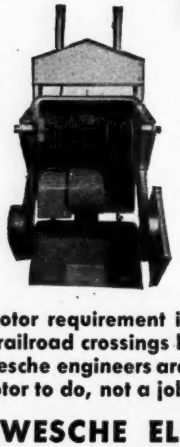
THAT'S THE KIND WE WANT

for instance...

Transport Products Corp. of Louisville, Kentucky, needed a motor to operate automatic crossing gates. The motor had to be extremely efficient because it operates from high cost storage battery current. For obvious reasons it needed to be fool-proof and it had to be tough because the lowering gate forces the motor to operate in reverse to generate current within itself. This brakes the arm's descent.

HERE IS THE WESCHE MOTOR THAT GETS THE JOB DONE!





HERE IT IS AT WORK!

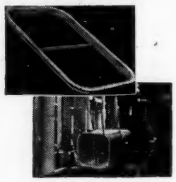
Your special motor requirement is probably far removed from railroad crossings but if it's out of the ordinary, Wesche engineers are ready to come up with the motor to do, not a job...but *the* job.

THE B. A. WESCHE ELECTRIC CO.
1621 Vine Street • Cincinnati 10, Ohio

DIVERSEY ALUMINUX

- Entirely Different Type of Alkaline Etching Compound for All Aluminum Alloys
- *ELIMINATES SLUDGE AND CEMENT-LIKE SCALE FORMATIONS ON TANK AND COILS*
- ASSURES UNIFORM ETCHED SURFACE WITH A DIFFUSED REFLECTION AND A FINE, EVEN APPEARANCE
- PROVIDES THE ONLY KNOWN METHOD OF CONTROL TO DETERMINE BATH LIFE

1. "Through the use of Diversey Aluminux we have been able to accomplish unequalled uniformity of the etch.
2. "No scale has ever developed on coils or tank walls since the application of Aluminux.
3. "Aluminux is proving to be less expensive because it need be dumped and recharged only on two week intervals. All other materials previously used were dumped every week. The estimated saving here alone is about 45%."



WRITE FOR FREE DESCRIPTIVE BULLETIN!

THE DIVERSEY CORPORATION
Metal Industries Department
1820 ROSCOE STREET, CHICAGO 13, ILLINOIS
In Canada: The Diversey Corporation (Canada) Ltd., Port Credit, Ontario

IT'S EASY as ABC

★

To reach the metalworking market. Just list the materials or machines you have for sale in the "Equipment–Materials" section and STEEL will do the rest. It is read weekly by specifiers and buyers in the plants which do more than 92% of the metalworking industry's business. For rates and further details, write STEEL, Penton Building, Cleveland 13, Ohio.

ever, the merchant seller here has been unable to accommodate this business.

Boston—Mystic Iron Works blast furnace continues in operation. It has a contract with the CIO Coke & Chemical Union. Supply of iron from Buffalo and other districts into this area is halted, but low operations of foundries here will make possible the balancing of this loss in most cases by Mystic production.

New York—Most district pig iron consumers will not be hard hit for the present by the steel strike. The great majority of gray iron foundries have at least 30 days' supply on hand and in some instances substantially more.

Philadelphia—Four blast furnaces continue in operation in this district, two at Swedeland, Pa., one at Chester, Pa., and the fourth at Birdsboro, Pa. Of the four stacks operating, only two do a merchant bussiness.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 161

Pittsburgh—Merchant coke sellers were flooded with requests to hold up shipments of furnace grades immediately upon the calling of the steel strike. Some business had been booked prior to the strike with the proviso that shipments be deferred in event of a steel walkout. Expectations are demand for foundry coke will be affected in time should the steel strike be prolonged and a severe shortage of pig iron result.

Warehouse . . .

Warehouse Prices, Page 163

Philadelphia — With distributors forbidden by the government to sell steel for manufacture of consumer durable goods during the steel strike, and with warehouses likely to conserve stocks as far as possible, June business may show another decline.

Pittsburgh — Warehouse stocks over-all are estimated at no more than 60 per cent of normal. Consequently, with the mills struck the distributors would be quickly stripped of inventory if stocks were not frozen by the government and if the steel walkout is prolonged to any extent. In some products the supply situation is more threatening than in others, notably bars and heavy plates.

Cleveland—Local distributors are comfortably supplied with flat-rolled tonnage but they are critically short of bar stock, heavy plates and some sizes of structurals.

Iron Ore . . .

Iron Ore Prices, Page 163

Cleveland—Iron ore shipments began to taper last week as effects of the walkout of CIO steelworkers spread. Miners in some Lake Superior properties walked out immediately while others were preparing to do so. The ore carriers will continue to bring down material as long as stockpiles at upper lakes hold out.

Some mills report the loss of ore through the strike will seriously hamper their steelmaking operations following settlement of the strike.

The drop in ore shipments follows the best week recorded so far this year. Lake Superior iron ore shipments for the week ended June 2 amounted to 2,125,969 tons compared with 3,083,739 tons for the like week a year ago. This brought the season's movement to date to 19,623,508 tons, or 167,580 tons more than for the same period in 1951.

Scrap . . .

Scrap Prices, Page 164

Pittsburgh—Scrap shipments are beginning to back up on dealers as result of holdup orders from the mills which were forthcoming immediately upon the calling of the latest strike by the steelworkers. However, up to midweek no distress tonnage had appeared on the market, producers having made provision to store incoming shipments in dealers' yards. Expectations are the market will be at a standstill pending settlement of the wage dispute, which some scrap authorities think may run two or three weeks. This is no "off-again-on-again" strike in their opinion. They think the issue this time will be fought out to a settlement. Meanwhile, a little stronger tone is noted in the cast scrap market, foundries being expected to display more interest in tonnage with pig iron supply cut off by the closing down of blast furnaces.

Cleveland — Despite the slowing down in the movement of scrap as result of the steel strike the tone of the market is described as firm. Small steelworks not affected by the walkout are active in the market although buyers are pressing for price concessions. Turnings are noticeably weak especially from dealers, but direct-production material, it is understood, is being taken by the mills at the regular market and stored in dealers' yards. Whether the market can resist the pressure for lower prices for long is uncertain. One steelworks in an adjacent area last week was reported offering $28 for machine shop turnings, off $4, $32 for short shoveling turnings, off $4, $36 for No. 2 bundles off $5, $39 for No. 2 heavy melting off $2 and $41 or base for No. 1 heavy melting. So far as could be learned no one had taken up this offer. The cast grades were reported showing a little more strength on the expectations of revived demand in event pig iron production is cut off for long.

Boston — Steelworks in two instances are halting scrap shipments. Cast grades are slow and weak, well below ceiling prices with trading light. Chemical borings are easier with demand slack.

Buffalo—A definitely easier tendency swept over the scrap market here last week with prices for blast furnace grades off sharply. Just before the steel strike started, two mill consumers placed orders for steelmaking grades at ceiling levels, but explicitly pointed out that turnings and borings would not be accepted. No market was reported for turnings on which prices floundered. In addition, a new sale was reported in No. 1 cupola at $42, or $7 under ceiling.

Philadelphia — With most of the steel mills closed, undertone of the steel scrap market is easier. No re-

"New Process"
Punches • Dies • Rivet Sets
Compression Riveter Dies
Made to highest standards and uniform quality thus insuring maximum service—
Since 1903
Large inventory of stock sizes of round punches and dies also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.
Write for catalog 46
GEO. F. MARCHANT COMPANY
1420-34 So. ROCKWELL ST., CHICAGO 8, ILL.

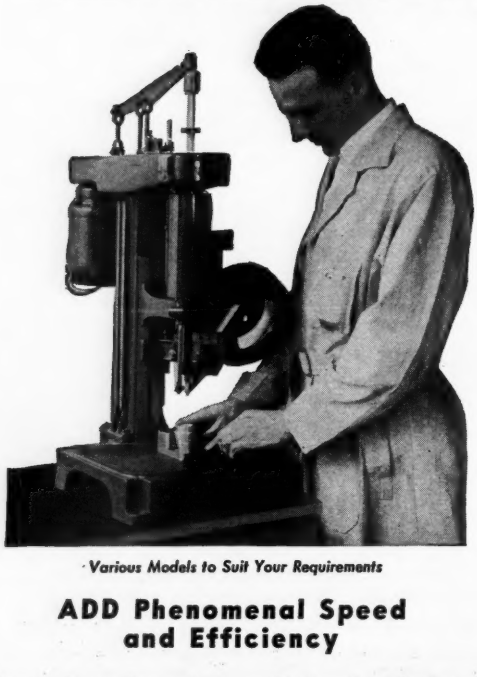
HEADLINE NEWS

EXTRA***

DETROIT POWER SCREWDRIVER ANNOUNCES

IMMEDIATE DELIVERY

No Waiting—Start Now to Benefit with These Outstanding ASSEMBLY AIDS



Various Models to Suit Your Requirements

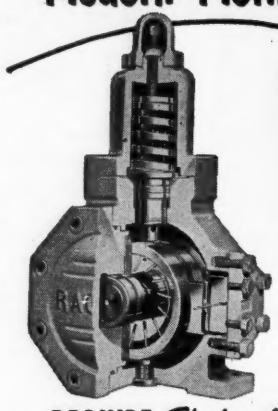
ADD Phenomenal Speed and Efficiency

No need to continue slow, costly hand methods; use Detroit Power Screwdrivers and profit immeasurably by increased production and economy. Drive all types of screws with almost incredible speed, as fast as one to two seconds per screw. Detroit Power Screwdrivers play an important part in the present-day industrial capacity to produce rapidly . . . So, now that prompt deliveries are made possible, send sample assembly for production estimate at once and let our 26 years' experience as specialists in assembly problems serve your individual needs. Also receive our catalog describing in detail our complete line of POWER SCREWDRIVERS, HOPPER FEEDING UNITS, NUT DRIVERS and SPECIAL ASSEMBLING MACHINES.

DETROIT POWER SCREWDRIVER CO.

2811 W. FORT ST. DETROIT 16, MICHIGAN

Modern Methods in . . .



MATERIAL FABRICATION • PARTS PRODUCTION • MACHINE OPERATION

REQUIRE *Hydraulic* POWER MOVEMENT

If you fabricate materials, produce parts or build machines, you will find Hydraulics an economical modern source of force for smooth oil-cushioned power movements.

Racine Variable Volume Pumps with interchangeable automatic governors, deliver only the volume of oil needed for the job. There is no waste of "pressure-oil" through relief valves — no by-passing — no wasted horsepower. Racine Oil Hydraulic Pumps *put all of the oil to work* — thus assuring a simple efficient hydraulic circuit with proven installation and operating economies. Capacities up to 70 gpm at 1000 psi.

BUY DEFENSE BONDS

Write for Racine's Hydraulic Catalog P-10-D.

RACINE

HYDRAULICS & MACHINERY, INC.

2069 Albert Street, RACINE, WISCONSIN, U. S. A.

RACINE — STANDARD FOR QUALITY AND PRECISION — RACINE HYDRAULICS & MACHINERY

MASTER MAKERS OF FINE BEARING METALS SINCE 1860

A. W. Cadman Mfg. Co.

28th and SMALLMAN STS., PITTSBURGH 22, PA.

INTRODUCTION TO THE STUDY OF HEAT TREATMENT OF METALLURGICAL PRODUCTS

By Albert Portevin

Fundamental knowledge and essential principles of heat treatment of steel are presented in simple and understandable manner. Research engineers, metallurgical students and steel plant metallurgists engaged in metallurgical investigations and the heat treatment of ferrous and non-ferrous metals will find this book of inestimable value.

246 pages — 4 tables
69 illustrations — Price $5.00 Postpaid

THE PENTON PUBLISHING CO.

Book Department, 1213 W. 3rd St., Cleveland 13, O.

ductions have been made in prices, but, significantly, at least one large consumer has not only suspended shipments, but, where possible, has cancelled orders. Some trade leaders see as a possibility re-establishment of the normal differentials on No. 1, No. 2 heavy melting steel and No. 2 bundles, as a trend toward softer prices. Low phos continues hard to sell but prices are unchanged. Weakness in cast grades is reflected by a further drop in No. 1 cupola to a spread of $38 to $39 delivered.

Chicago—An already weakening scrap market is expected to deteriorate further as result of the steel strike. Except for the few small plants still operating there is almost no demand for melting material. Immediately after the Supreme Court decision consumers issued stop orders on shipments and embargoes on dealer material. June 6 was made the deadline on shipments of industrial and railroad scrap enroute. In any one case these grades will be laid down outside during the shutdown, but for the time being most idle mills will hold material in cars under demurrage.

St. Louis — Holdup instructions on scrap deliveries swamped dealers last week. Most were from consumers outside the district, since Laclede Steel, Scullin Steel, General Steel Castings and other large local foundries will not be closed by the new steel strike. Dealers' receipts are slowing as farmers start their field work. Within three weeks industrial scrap receipts also will fall off when many plants begin their June-through-July vacation season. Cast prices are $5 to $10 under ceilings. Melting steel price weakness continued to show up in reduced springboards mills would pay.

Seattle—Scrap was arriving in sufficient volume to cover current needs and to increase stockpiles. Sellers seemed reconciled to lower price levels and were shipping in larger volume. Heavy melting scrap was still at ceiling levels but buying was confined to closer areas, eliminating heavy freight charges. Cast iron scrap and No. 2 bundles were quoted $5 below ceiling and mills were selective in buying these grades.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3000 tons, flight test hangar, Boeing Airplane Co., Seattle, to American Bridge Co., Portland, Oreg.

650 tons, Skagit county bridge, Washington state, to Virginia Bridge Co., Richmond, Va.; rails and miscellaneous items to Standard Steel Fabricating Co. Inc., Seattle.

370 tons, addition, arsenal, Frankfort, Pa., through Perry Goldman Construction Co., Philadelphia, to Bethlehem Fabricators, Bethlehem, Pa.

366 tons, Marion county courthouse, Salem, Oreg., to Puget Sound Bridge & Dredging Co., Seattle.

230 tons, medical school addition, Louisiana State University, New Orleans, to Jones & Laughlin Steel Corp., New Orleans; R. P. Farnsworth & Co. Inc., New Orleans, general contractor.

170 tons, Main street bridge, Fish river, Fort Kent, Me., to Bancroft & Martin Rolling Mills Co., Portland, Me.; Norman E. Jackson Inc., Pittsfield, Me., general contractor; bars to same fabricator.

STRUCTURAL STEEL PENDING

15,000 tons, two hangars, Boeing field, Seattle; bids to King county commissioners, June 9.

5700 tons, East Bronx general hospital addition, New York; Gerace & Castagena Inc., Queens, that city, low on general contract.

2500 tons, superstructure, Andrew P. McArdle bridge, double-leaf bascule with open grid deck, Chelsea river, Boston-Chelsea, Mass.; bids June 18, state Department of Public Works, Boston.

2500 tons, state girder spans, Johnson City, N. Y.; bids June 15.

1428 tons, steel bearing piles; bids June 9, state purchasing agent, Providence, R. I., furnish and delivery, freight allowed.

1000 tons or more, engine storage building No. 8 and extension to building 17, naval advance depot, Quonset Point, R. I.; bids June 10, First Naval District, Boston.

1000 tons plus, 251 tower bodies, assemblies and extras; bids to Bonneville Power Administration, Portland, Oreg., June 5.

655 tons, viaduct, James J. Storrow Memorial drive, Charles river reservation, Boston; bids in to Metropolitan District Commission, Boston; also 70 tons, reinforcing steel.

430 tons, Ivy Mill bridge, North Branch, Patapsco river, Baltimore; bids June 18; also 55 tons of reinforcing bars; 100 tons of bars, 475 feet of bearing piles and 28 tons of low alloy steel.

400 tons, stoplogs, etc., McNary dam; Pacific Car & Foundry Co., Seattle, low.

125 tons, state bridge, Fall River, Mass.; bids June 24, state Department of Public Works, Boston.

100 tons, five state highway bridges, Essex-Gloucester-Manchester, Mass.; bids June 10, state Department of Public Works, Boston.

REINFORCING BARS . . .

REINFORCING BARS PLACED

505 tons, medical school addition, Louisiana State University, New Orleans, to Laclede Steel Co., St. Louis; R. P. Farnsworth & Co. Inc., New Orleans, general contractor.

REINFORCING BARS PENDING

1200 tons, city light department headquarters building, Tacoma, Wash.; bids in.

450 tons, Eklutna power plant project, Alaska; Rue Construction Co., Fargo, N. D., low $2,578,103 to Bureau of Reclamation, Denver.

445 tons, underpass-roadway, Charles street, Charles river reservation, Boston; Coleman Bros. Corp., Boston, low.

250 tons, test hangar, Boeing Airplane Co., Seattle; bids to R. P. Holman, company engineer, June 19.

155 tons, five state bridges, Essex-Manchester-Gloucester, Mass.; bids June 10, state Department of Public Works, Boston.

PLATES . . .

PLATES PLACED

500 tons or more, four non-self-propelled open lighters, Bureau of Ships, Washington, to Nashville Bridge Co., Nashville, Tenn., $184,000; three to Burton Construction Co. Inc., Port Arthur, Tex., $164,265.

PLATES PENDING

50 tons, also 23,700 feet H piling, Eklutna power plant project, Alaska; general bids in to Bureau of Reclamation, Denver.

100 tons plus, fuel tanks, McChord air field, Wash.; bids within 30 days.

RAILS, CARS . . .

RAILROAD CARS PLACED

Oliver Iron Mining Co., forty-four 70-ton and ninety-five 100-ton dump cars, to Eddystone Division, Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

Phelps Dodge Corp., forty-four 90-ton ore dump cars and six 50-ton flat cars to Eddystone Division, Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

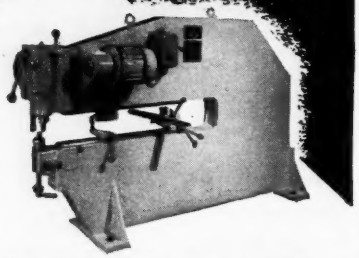
United States Steel Co., twelve 50-yard industrial cars, to Eddystone Division, Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

RAILROAD CARS PENDING

Army Transportation Corps, Marietta, Pa., 35 fifty-ton hoppers; bids June 18; also 27 side dump air operated 50-ton railway cars.

25 YEARS OF LEADERSHIP IN FASTENINGS OF STAINLESS STEEL
To YOU, Anti-Corrosive's 25th Anniversary is an assurance that the oldest, largest and best known firm dealing exclusively in stainless steel fastenings is best suited to serve your needs in this field.
Still Plenty of Fastenings IN STOCK
For quick delivery of stainless steel fastenings, check Anti-Corrosive first, since many stock items and alternates are on hand!
FREE - A - N Fastening Selector !
Write for handy slide Chart No. 52S — instantly identifies A-N Nos. pertaining to stainless fastenings, gives sizes, other data. Catalog available.
1927 – 1952
Anti-Corrosive
Metal Products Co., Inc.
Manufacturers of STAINLESS STEEL FASTENINGS
CASTLETON ON HUDSON, NEW YORK

LOOK at what PULLMAX can do for you



Straight cutting, circle cutting, free hand cutting, slot cutting, beading, folding and many variations of these operations . . . *ALL ON ONE PIECE OF MACHINERY!* Easy to set up and change tools . . . handles wide range of materials such as mild or stainless steels, non-ferrous metals, mesh, plastic sheets, composition boards of all kinds. Write for descriptive catalog showing performance and data on all models.

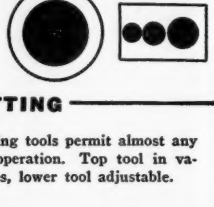
ALL THESE OPERATIONS ON ONE MACHINE

STRAIGHT CUTTING

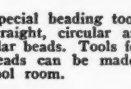
With straight cutting attachment, Pullmax performs as a straight shear. Cuts inside square holes. Can be used as a guide for other operations.

CIRCLE CUTTING

The Pullmax machine does not require a center hole for circle cutting. Simple, adjustable centering attachments cut circles quickly and accurately.



SLOT CUTTING



Slot cutting tools permit almost any slotting operation. Top tool in various sizes, lower tool adjustable.

BEADING

Special beading tools permit straight, circular and irregular beads. Tools for special beads can be made in any tool room.

FOLDING

Standard size folding tools do straight, circular or irregular shape folds. Special tools easily made in any tool room.

LOUVERS and NIBBLING

Special attachments permit louver cutting and nibbling.

PULLMAX . . . "The complete sheet and plate working shop" . . . in one machine!

AMERICAN PULLMAX CO., INC.

2623 North Western Avenue — Chicago 47, Illinois

3-minute test for Pickle Tanks with

FERRO PICKLE PILLS

If you can tell red from green, and count to ten, the job is easy. That's why Ferro Pickle Pills have been standard equipment in the best pickling rooms, for years.

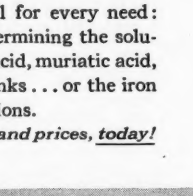
There's a Ferro Pickle Pill for every need: a simple, sure method of determining the solution percentage of sulphuric acid, muriatic acid, alkali and metal-cleaning tanks . . . or the iron content of any of these solutions.

Write for literature and prices, today!

FERRO

FERRO CORPORATION
4150 E. 56TH STREET
CLEVELAND 5, OHIO

H&G Insert Chaser DIE HEADS



famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

THE EASTERN MACHINE SCREW CORP., 22-42 Barclay Street, New Haven, Conn.
Pacific Coast Representative: *A. C. Berbringer, 334 N. San Pedro St., Los Angeles, California.* Canada: *F. F. Barber Machinery Co., Toronto, Canada.*

PRODUCERS OF *Hot Rolled* ELECTRIC FURNACE QUALITY

BARS • SMALL SHAPES • STRIP

BOIARDI STEEL CORPORATION
300 Lower Market St. — Milton, Penna.

Send your prints or sample blanks for quotation.

World's Largest Producer of LOW COST, PRECISION DIE CUT STAMPINGS IN SMALL LOTS

The Stamping illustrated was produced by our patented process at a cost of:
$58.00 for the first 100 pieces
8.30 for each subsequent 100
plus actual market price of material. Your stampings of any size or shape up to ⅜" thick can be produced in proportion to this price.

DAYTON ROGERS *Manufacturing Company*

2832 13th AVE. S • MINNEAPOLIS 7, MINNESOTA

Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Foote Mineral Plans Big Expansion

Foote Mineral Co., Philadelphia, plans for a three-way expansion of its lithium production involving about $3 million. The program includes construction of a lithium chemical processing plant at Sunbright, Va.; tripling the output of lithium ore at its property near Kings Mountain, N. C.; and construction of facilities for quarrying and processing limestone at Sunbright, Va. The Sunbright processing plant will be in operation by mid-1953. The plans at Kings Mountain call for installation of additional mining, milling and processing equipment for the recovery of spodumene, the basic lithium ore. In addition, facilities for the recovery of tin, mica, columbite and feldspar will be enlarged.

Pacific International Moves Offices

Pacific International Products Inc., manufacturer of valves and fittings for compressed gases, established new headquarters in the Boothe building, 475 Huntington Dr., San Marino, Calif.

Ferguson Gets Hooker Plant Contract

H. K. Ferguson Co., Cleveland, was awarded a contract by Hooker Electrochemical Co., Niagara Falls, N. Y., for construction of a $10 million chlorine-caustic plant at Montague, Mich. The plant is expected to be in operation by the end of 1953 with an annual capacity of about 100,000 tons.

Sparkler Mfg. Opens Branch on Coast

Sparkler Mfg. Co., Mundelein, Ill., manufacturer of filtration equipment, opened a branch office and warehouse at 612 N. San Vicente Blvd., Los Angeles. Richard E. Shields is the West Coast sales manager.

Rivett Lathe & Grinder Names Agent

Rivett Lathe & Grinder Inc., Boston, appointed Paul-Munroe Co., Bell, Calif., as its representative in that district for its line of air and hydraulic valves and cylinders and hydraulic power units.

Spring Producer Names Representative

American-Fort Pitt Spring Division, H. K. Porter Co. Inc., Pittsburgh, appointed Sales Engineering Co. Inc., Salt Lake City, Utah, as its exclusive sales representative in the Mountain States area. The division produces all types of hot and cold-wound springs for industrial and railroad applications.

Cambridge Wire Enlarges Facilities

Cambridge Wire Cloth Co., Cambridge, Md., is increasing facilities for the production of medium-heavy and heavy grades of industrial wire cloth. Cambridge also is a producer of woven wire conveyor belts, special metal fabrications and Gripper slings.

New York Coil Moves to Phoenixville

New York Coil Co. Inc. moved its offices, manufacturing and warehouse facilities to 40-48 Second Ave., Phoenixville, Pa.

Acme Steel Building Canadian Plant

Acme Steel Co. of Canada Ltd., subsidiary of Acme Steel Co., Chicago, started construction on a $980,000 plant at Scarborough, Ont. Scheduled to be completed by late fall, the Scarborough Works will manufacture flat steel strapping and seals for container reinforcement. Special machinery to be installed includes an overhead crane, slitting machines, heat treating facilities and painting equipment.

Forms Construction Machinery Unit

Baldwin-Lima-Hamilton Corp., Philadelphia, combined into one internal operating unit its Lima Division and Austin-Western Co., a wholly-owned subsidiary. Products of both organizations will continue to be sold under present names and trademarks. McClure Kelley will be general manager of this Construction Machinery Division and will continue as president of Austin-Western Co. Henry F. Barnhart was appointed assistant general manager of the division and will continue as vice president of the parent corporation and

MATHEWS
CONVEYERS

Since 1905. Engineers and manufacturers of Conveyers and Conveyer Systems for the Metal-working Industries.
Three modern plants. Engineering Offices in All Principle Cities. There's an Engineering Sales Office near you.

MATHEWS CONVEYER CO.
ELLWOOD CITY - PENNSYLVANIA
SAN CARLOS . . . CALIFORNIA
PORT HOPE - ONTARIO, CANADA

S. S.
CONVEYOR
CHAIN
to your specifications
LARGE OR SMALL
QUANTITIES

We can assist you in many ways with most materials handling problems, and especially invite your inquiries along this line.

★

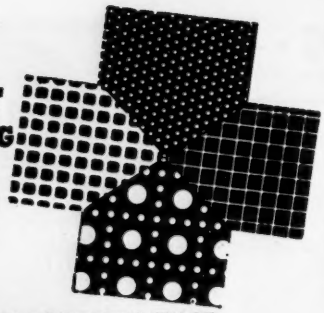
We are in a position to make prompt deliveries

★

ROCKFORD PRODUCTS CO., INC.
11645 KLINGER
DETROIT 12, MICH.

WARD
STEEL
CO.
PROMPT WAREHOUSE SERVICE ONLY
Most Complete Stock in America of
BLUE TEMPERED SPRING STEEL
We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.
87A Rindge Ave. Ext.
Phone UN 4-2460
CAMBRIDGE 40, MASS.
Branches:
3042-3058 W. 51st Street, CHICAGO, ILL.
Phone: Grove Hill 6-2600
Fenner Street, Providence, R. I.
Phone: Gaspee 1-5573, 1-8573

YOU GET PERFORATING PLUS



STEEL AVAILABLE FROM ACCURATE'S STOCK

ACCURATE PERFORATING GIVES YOU THESE PERFORATING **PLUS** EXTRAS

PLUS Experienced "Know How"
PLUS Engineering Consultation
PLUS Special Dies for Your Needs

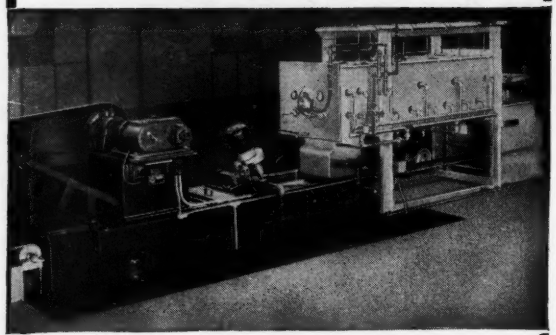
Whether you need pinpoint perforation for a coffee filter or an ornamental grille for an ocean liner, Accurate Perforating offers all these extras PLUS—a price that's hard to beat. Write today for your free catalog on Accurate Perforated materials.

SERVING THESE INDUSTRIES:
AIRCRAFT • AUTOMOTIVE • COMMUNICATIONS • ELECTRICAL EQUIPMENT • FARM MACHINERY • HEATING • RADIO AND RADAR • RAILROADS • SHIP BUILDING • STEEL • WASHING MACHINES

IN THESE MATERIALS:
ALUMINUM • BRASS • BRONZE • COPPER • LEAD • MONEL METAL • STEEL • MASONITE • STAINLESS STEEL • PLYWOOD • PAPER

ACCURATE
PERFORATING COMPANY
1101 South Kedzie Avenue, Chicago 12, Illinois

CONTINUOUS
*NI-CARBING



This AGF No. 166 RECIPROCATING FURNACE and QUENCH TANK has a capacity of 150 to 300 lbs. of work per minute. It is only one of five standard sizes.

In addition to *Ni-Carbing, versatile AGF Reciprocating Furnaces can be used without modification for clean hardening, carburizing, and other controlled atmosphere processes for a wide variety of parts ranging from pen points to drop forgings.

***The Original Ammonia-Gas Case Hardening Process.**
Write for Bulletins 815A and 820

AMERICAN GAS FURNACE CO.
996 LAFAYETTE STREET, ELIZABETH 4, N. J.

The *Cleveland Steel Tool Co.*
• PUNCHES • DIES • CHISELS • RIVET SETS •
IF IT'S *RIVETED* YOU *KNOW* IT'S SAFE
WE FEATURE SPECIAL PUNCHES & DIES
660 E. 82nd ST., CLEVELAND, O.

THE BELMONT IRON WORKS

STRUCTURAL STEEL—BUILDINGS & BRIDGES
RIVETED—ARC WELDED *Cable Address—Beliron*
Engineers—Fabricators—Erectors—Contractors—Exporters
Shops—Philadelphia—Eddystone—Royersford
Main Office: Phila. 46, Pa.
New York Office—44 Whitehall St., N. Y. 4, N. Y.

SCREW MACHINE PRODUCTS *made to your order!*
SET SCREWS CAP SCREWS SPECIAL PARTS
STEEL • BRASS • STAINLESS • ALUMINUM
send us your specifications for quotation
SAMUEL J. SHIMER & SONS, Inc. Milton 2, Pa.

OHIO LOCOMOTIVE CRANES

25 TO 50 TON CAPACITY
DIESEL • GASOLINE • ELECTRIC • STEAM
THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS, OHIO

THE RD-20R TURNING ROLL

Write for Bulletin 81.

A top quality, production line turning roll for welding, painting, & finishing operations on tanks & other cylindrical shapes up to 1 ton, 6 ft. diameter, 12 ft. long. Easy-to-adjust reversible variable speed from 10 to 100 IPM. Price includes motor; cable, "On-Off" foot switch. Reversing foot switch extra.

REED ENGINEERING COMPANY
1005 W. FAIRVIEW . . . CARTHAGE, MO., U. S. A.
DESIGNERS AND MANUFACTURERS OF
MODERN METALWORKING MACHINES

general manager of the Lima Works. Ralph K. Stiles was appointed director of sales of the division and will continue as executive vice president of Austin-Western Co.

GE To Build Transformer Plant

General Electric Co., Schenectady, N. Y., will build a multimillion-dollar transformer manufacturing plant at Rome, Ga. Scheduled for completion by mid-1953, the plant is expected to be in full production by 1955. The plant will make only large distribution transformers and some classes of power transformers.

Eastern Brass Expands Warehouse

Exterior work has been completed on the one-story unit abutting the present two-story structure which houses the Eastern Brass & Copper Co., 1122 E. 180th St., New York. Designed to meet the firm's increasing activity in the steel warehousing and processing field, the unit will add 17,000 square feet of floor space and will contain new processing machinery.

Kinoshita Fosters Japanese Trade

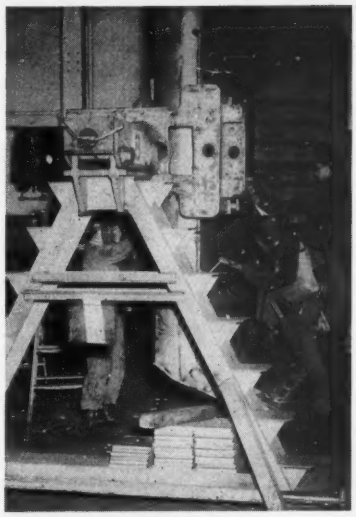
Kinoshita & Co. Ltd., San Francisco, is the first Japanese corporation to be organized in California since before World War II. It was organized to export Nevada mined iron ore to Japan through San Francisco Bay area ports and to import finished steel products from Nippon. The firm is associated with Kinoshita & Co. Ltd., Tokyo, Japan's largest importer-exporter of iron ore and steel. Since the war, the West Coast has been Japan's principal source of iron ore. Ore was the fourth most valuable export through the San Francisco custom district in 1951 with a valuation of $2,222,000.

Crown Firms Enlarge Facilities

Crown Metal Products Inc., Baltimore, which last December opened a machine shop in 20,000 square feet of space at 1727 Llewellyn Ave., that city, is equipping, in conjunction with the Crown Heating Co. Inc., 14,000 square feet of additional space at 113-123 N. Collington Ave. The offices of both companies are to be at the Collington avenue address.

Tool Engineers Form New Chapter

American Society of Tool Engineers, Detroit, chartered its 97th chapter in Lima, O. More than 100 tool engineers and production executives from the area became charter members. Officers of the new chapter include: R. J. Schimpf, tool supervisor, Westinghouse Electric Corp., chairman; A. E. Feightner, tool supervisor, Baldwin-Lima-Hamilton Corp., 1st vice chairman; R. E. Fromson, division manufacturing engineer, Westinghouse Electric Corp., 2nd vice chairman; H. W. Carey, partner, Lima Design Service, secretary; W D. James, engineering control manager, Superior Coach Corp., treasurer.



Body Positioner

At Euclid Road Machinery Co., Cleveland, huge truck bodies like this are placed on rotating positioners, assuring maximum efficiency in welding operations. Heavy side and bottom plates are braced with box section supports

Cleco Appoints Three Distributors

Cleco Division, Reed Roller Bit Co., Houston, appointed as its distributors in their respective territories: Charles H. Harden & Co. Inc., Seattle; Highway Equipment & Supply Co., Lincoln, Nebr.; Long Beach Welders' Supply Co., Long Beach, Calif.; E. W. Harman Co., Columbus, O. Cleco manufactures air tools and accessories.

Incorporation Papers Filed

Charters of incorporation were filed with the secretary of state's office, Dover, Del., by Innes-McCaron Co., machinery, with Corporation Guarantee & Trust Co., Wilmington, Del., serving as the principal office; Field Industrial Corp., metal and metal products, with Corporation Trust Co., Wilmington, serving as the principal office; Chainlock Process Corp., machinery, with Prentice-Hall Corporation System Inc., Dover, serving as the principal office; Arlington Industries Inc., aluminum and magnesium castings, with Corporation Trust Co., Willmington, as the principal office.

QUANTITY PRODUCTION OF GREY IRON CASTINGS

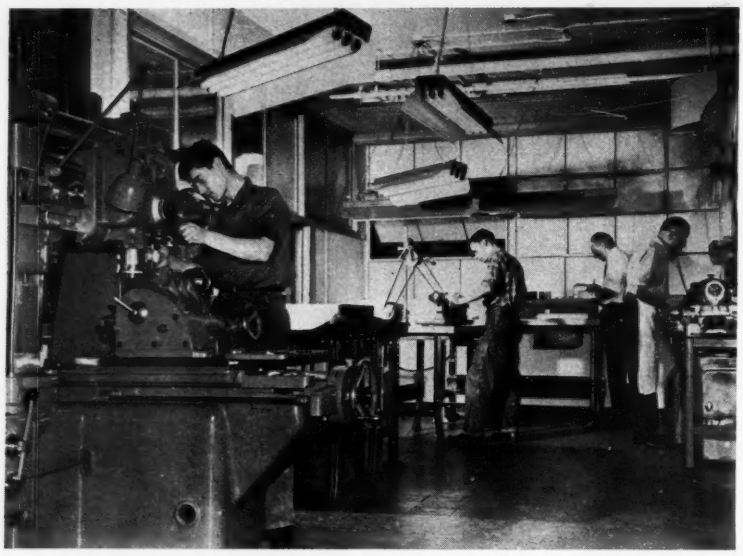
ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

LEAKE
Created*
Metal
Stampings

*RESEARCH • DESIGN
ENGINEERING • PRODUCTION

THE LEAKE STAMPING CO.
MONROE, MICHIGAN



Air Conditioning for Accuracy

These three new machines at the Mt. Vernon, N. Y., plant of the Research and Control Instruments Division, North American Philips Co. Inc., are for precision work on x-ray diffraction instruments. The Hauser No. 4 jig bore machine, foreground, the Schaublin turret lathe, left rear, and the Monarch 10-inch toolmaker's lathe, right, will be in a completely air conditioned room when production work begins to assure maximum accuracy for the finished x-ray units

NBPA Consolidates with LPGA

In the interest of implementing a stronger and larger trade association to better serve the liquefied petroleum gas industry, National Butane-Propane Association and the Liquefied Petroleum Gas Association have consolidated under the latter name. Foster N. Mabee, president, Colorado Natural Gas & Fuel Co., Denver, is president of LPGA.

Varian Plans Research Laboratory

Varian Associates, San Carlos, Calif., is expanding its facilities in that city and will construct a research and development laboratory in Palo Alto, Calif. The latter project will cost about $729,838. Varian is engaged in the electronics business.

H-B Instrument Buys Larger Quarters

H-B Instrument Co. acquired a plant at American and Bristol streets, Philadelphia, providing more space for increased production. The firm will occupy the new quarters soon.

Sub-Zero Appoints Representatives

Sub-Zero Products, Cincinnati, appointed as its representatives: Marshall & Huschart Machinery Co., Indianapolis; Bernard E. Aldridge, IndustraTool Associates, Chicago; Thermorite Corp., St. Louis; L. Heres DeWyk & Co., Ansonia, Conn.; Severance Tools of Canada Ltd., Toronto, Ont.; Marubeni Co. Ltd., Tokyo, Japan. Sub-Zero manufactures low temperature industrial chilling machines.

Allis-Chalmers Names Distributors

Allis-Chalmers Mfg. Co., Milwaukee, appointed Oattis Electric Supply Co. Inc., Memphis, Tenn., as a distributor for its motors, control, pumps, transformers and drive equipment in that area. The company appointed Flushing Electric Corp., Flushing, Long Island, as a distributor for its motors and control in that territory.

Kurt Orban Opens West Coast Branch

Kurt Orban Co. Inc., New York, opened a branch office and showrooms at 8687 Melrose Ave., West Hollywood, Calif., under the supervision of Dr. F. W. Strasmann. This firm is a distributor of German-built machine tools.

Belmas Enters Iron and Steel Trade

Belmas Co. Inc., Houston, was granted a charter to engage in the iron and steel business. Incorporators are W. H. Mason, Isabel Mason and W. H. Davis.

Quaker Rubber Expands Facilities

Expansion of its rubber roll covering facilities at a cost of $100,000 has been completed by Quaker Rubber Corp., a division of H. K. Porter Co. Inc., Philadelphia. Included in the new department are the latest type lathes, grinders, overhead traveling cranes, testing and laboratory facilities.

Hydraulic Press Marks 75th Year

Hydraulic Press Mfg. Co., Mt. Gilead, O., is observing its 75th anniversary this month.

Elwell-Parker Names Indiana Agent

Elwell-Parker Electric Co., Cleveland, appointed the firm of Martin & Brown Engineering, Indianapolis, as representative in the Indiana area.

Houston Steel Fabricators Chartered

Houston Steel Fabricators Inc., Houston, was granted a charter to engage in the iron and steel business. Incorporators are D. Y. Wilson, John O. Long and Paul D. Long.

Shields Rubber Moves Branch Office

Shields Rubber Co., Pittsburgh, distributor of industrial rubber products, moved its Chicago branch operations into larger quarters at 108-112 N. Clinton St.

Asahi-Dow To Build Plant in Japan

Asahi-Dow Ltd., recently formed associate of Dow Chemical International Ltd., Midland, Mich., and Asahi Chemical Industry Co., large Japanese chemical and textile manufacturer, will proceed immediately with plans to build facilities for production of saran, a plastic, on the Japanese island of Kyushu. President of Asahi-Dow Ltd. is Tadayoshi Kitamura, former managing director of Asahi Chemical.

National Electric Buys Bacon Agency

National Electric Products Corp., Pittsburgh, purchased the Bacon agency, Denver, and established a district office at 3327 Brighton Blvd., that city. All personnel and warehousing facilities of the Bacon agency are now part of the National Electric organization.

Conoflow Appoints Representative

Instrument Sales Corp., Seattle, was appointed to represent Conoflow Corp., Philadelphia, in the Pacific northwest area. Conoflow produces pneumatic control equipment.

Damascus Tube Names Sales Agents

Damascus Tube Co., Greenville, Pa., appointed the following sales representatives: S. E. Anning Co., Cincinnati; Denton & Anderson Co., Detroit and Cleveland; H. W. Mollison, Pittsburgh; P. L. Fair, Philadelphia; Steel Mill Products Co., Chicago; R. E. Schlendorf, San Francisco.

RAILROAD EQUIPMENT—*FOR SALE*

STANDARD GAUGE FREIGHT CARS

Box, Single Sheathed, 50-Ton
Cabooses, Eight Wheel, Cupola Type
Flats, 40-and 50-Ton, Steel Underframe, 40'0"
Gondolas, Composite, 40-Ton Capacity
Gondolas, Composite or All Steel, 50-Ton and 70-Ton
Hoppers, Covered, All-Steel, 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, All-Steel, 70-Ton, Cross Dump
Tank, 3,000-Gallon, High Pressure

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

STANDARD GAUGE AIR DUMP CARS

Four—30-Yd., 50-Ton Cap., All Steel, Side Dump (Drop Door)
End Dump, 20-Yd., 50-Ton Drop Door End Dump, 10-Yd., 30-Ton Lift Door
Side Dump, 16-Yd., 30-Ton Lift Door

STANDARD GAUGE DIESEL LOCOMOTIVES

One Plymouth Diesel-Mechanical, 65-Ton, Type 0-6-0, Built 1940

One 1500 H.P., 120-Ton, Road Switcher, Diesel-Electric, Type 0-4-4-0

Send us your inquiries WE BUY FREIGHT CARS FOR DISMANTLING *Send us your offerings*

IRON & STEEL PRODUCTS, INC.

REPAIR PARTS For All Types of Freight Cars

General Office
13462 S. Brainard Ave.
Chicago 33, Illinois
Phone: BAyport 1-3456

New York Office
50-D. Church Street
New York 7, N. Y.
Phone: BEekman 3-8230

STORAGE TANKS
6,000 Gallon
8,000 Gallon
10,000 Gallon

"ANYTHING containing IRON or STEEL"

MOTORS, GENERATORS, TRANSFORMERS

1—1500 H.P.
Bought and Sold
New and Rebuilt
ELECTRIC EQUIPMENT CO.
ROCHESTER 1, N. Y.

FORGING & DIE SINKING EQUIPMENT

All Kinds We Buy—We Sell Contact Us First
WILKIE DIE PRODUCTS COMPANY
Specialists in Forging Equipment
1186 Hawthorne Blvd. Grosse Pointe Woods 30, Mich.
Phone (Detroit) TUxedo 1-7140

WE CAN HELP YOU TO CONTACT high calibre men to fill specific jobs you have in mind—
Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry.
When you have an opportunity to offer, use the Help Wanted columns of STEEL.

HELP WANTED

Man for sales representative in our Chicago office with metallurgical background in the steel industry.

Answer to:
PITTSBURGH METALLURGICAL CO., INC.
P.O. Box 636 Niagara Falls, N. Y.

DISTRICT SALES MANAGER

To establish Detroit Branch Sales office of Steel Distributor. Must have drive, initiative and administrative potential. Background in heavy industrial field essential. A challenging opportunity with a successful company. Starting salary $6,000. per year plus expenses. Will be asked to complete psychological tests at employer's expense. Address replies to

The Personnel Laboratory
153 Lexington Ave., New York 16, N. Y.

CLASSIFIED

Help Wanted

MAINTENANCE SUPERVISOR
Large manufacturing company in Midwest. Graduate Engineer—5 years experience actively directing maintenance of heavy equipment, gears, bearings, shafting, etc. State age, education, experience and salary desired. Write Box 515, STEEL, Penton Bldg., Cleveland 13, Ohio.

Accounts Wanted

SILICA FIRE BRICK
Source of supply on Silica fire brick desired by broker of refractories for the past thirty years in the Pittsburgh Tri-State area. Write Box 519, STEEL, Penton Bldg., Cleveland 13, Ohio

MANUFACTURERS REPRESENTATIVE
Metallurgical Engineer, 17 years' experience in Chicago, with best possible connections in chemical, pharmaceutical, and food processing industries, desires additional account. Write Box 503, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

PLANT MANAGER—PRODUCTION MANAGER TWENTY YEARS EXPERIENCE IN DIVERSIFIED MANUFACTURING. A CAPABLE ADMINISTRATOR WITH PROVEN ABILITY. THOROUGHLY VERSED IN MODERN PRODUCTION METHODS AND CONTROL. WILL GO ANYWHERE. WRITE BOX 520, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.

EXPERIENCE IN MILITARY CONTRACTS Administration. 13 years as Officer and Civilian assigned to Army Ordnance and Navy Contracting and Inspection Offices. Facilities Officer, Small Business Specialist, NPA Regulations, Invitations for Bid, Inspection, Specifications, etc. Familiar with AF, AS Medical Office and VA purchasing methods, Metallurgical and Industrial Engineering and Legal Training—Cleveland, Ohio area only. Available August 18, 1952. Write Box 522, STEEL, Penton Bldg., Cleveland 13, Ohio.

—MANUFACTURING EXECUTIVE—
HARD HITTER DESIRES GENERAL MANAGER, WORKS MANAGER OR CHIEF ENGINEER SPOT WITH MEDIUM SIZE FIRM INTERESTED IN PROGRESS. ABLE TO COPE WITH TOUGH MANUFACTURING AND MANAGEMENT PROBLEMS. OFFER EIGHTEEN YEARS OF SOLID EXPERIENCE IN EXCHANGE FOR MINIMUM $15,000 SALARY AND OPPORTUNITY TO WORK UP TO NUMBER ONE OR NUMBER TWO POSITION. PRESENTLY EMPLOYED. WRITE BOX 523, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.

OPEN TIME
300 TON PRESS BRAKE

Will bend 20' x ¼" to 6' x ¾" Pl.
ST. JOSEPH STRUCTURAL STEEL CO.
Box 68 Sta. "A" St. Joseph, Mo.

FOR SALE
1—Riehle 80,000# *Tensile & Compression* Testing Machine
Immediate Delivery
Reasonable
CONSOLIDATED PRODUCTS COMPANY, INC.
15-21 Park Row New York 38, N. Y.

FOR SALE
Hyster YT-40 Fork lift truck with crane boom, 30" scoop attached, gasoline powered engine.
Weight 6100 lbs.—wheelbase 56"
72" free lift, 30" load arms capacity, 4000 lbs.
Overall Height collapsed 97½"—Extended 167".
DUPLEX MFG. & FOUNDRY COMPANY
398 West River St. Elyria, Ohio
Phone 2353

NEW PIPE
Warehouse Stocks of
STANDARD • MERCHANT
LAP WELD • SEAMLESS
BUTTWELD • SPIRAL WELD
L. B. FOSTER CO.
HOUSTON 2, TEX. CHICAGO 4, ILL.
PITTSBURGH 30, PA. NEW YORK 7, N.Y.

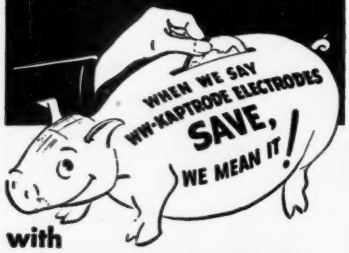
EMPLOYMENT SERVICE

CONFIDENTIAL COUNSELLING
ON ALL
PERSONNEL PROBLEMS
To EMPLOYER and EMPLOYEE
EXECUTIVE—(All Branches)
ENGINEERING—(All Phases)
ADMINISTRATIVE—ACCOUNTING
SALES—ADVERTISING
In Salary Brackets
$5,200-$50,000
NATIONAL COVERAGE

Please write briefly, outlining your specific experience or personnel needs.

Wm. H. Bruce, Mgr.
EMPLOYMENT COUNSEL
Suite 500, 7 W. Madison St. Chicago 2, Ill.
FInancial 6-2100

SAVE...
• COPPER • INVENTORY
• TIME • MAINTENANCE
• ELECTRODE COSTS



with

WW®
KAPTRODE*
*Trade Mark
SPOT WELDING
ELECTRODES

The new WW Kaptrode Electrode is a small cap type electrode which fits into a semi-permanent Kaptrode Adapter Shank. This in turn fits into any standard Morse taper type holder of appropriate taper size. The entire assembly makes a highly efficient water-tight and electrically-efficient unit.

- COPPER SAVINGS—75% and more with widespread, careful use.
- ELECTRODE COST SAVINGS—20% and up in ordinary shop operations; careful operators save as high as 50%.
- INVENTORY SAVINGS—30% and up; only small supply of shanks needed; electrodes are interchangeable; one shank with proper care should outlast ten or more.
- TIME SAVINGS—Kaptrodes quickly, easily inserted and removed.
- MAINTENANCE SAVINGS—in majority of cases, the Adapter Shank may be left permanently in the holder, saving maintenance and changeover time.

For the toughest electrode-consuming job in your plant, order a supply of WW-Kaptrode Electrodes NOW!

WW®

22803A

WELDER-WEED & CO., Division of Fansteel Metallurgical Corp. • 11644 Cloverdale Avenue • Detroit 4, Michigan

Advertising Awards—The Winners

Here are the winners, of the First Annual Advertising awards given by the Joint Advertising Committee of the National Industrial Distributors' Association and the Southern Industrial Distributors' Association at the Industrial Supply Convention, Atlantic City, N. J., May 19, 1952. FRONT ROW, L to R: J. M. Hughes, Republic Rubber Division of Lee Rubber & Tire Corp., First Award, Class A, and Honorable Mention in Class B; M. A. Hannum, Bunting Brass & Bronze Co., First Award, Class D; F. E. Tilley, New York Belting & Packing Co., First Award, Class C, and Honorable Mention, Class A; Frederick T. Turner, Osborn Manfacturing Co., First Award, Class B, and Honorable Mention, Classes A and C; Alex P. Fox, Lincoln Engineering Co., Honorable Mention, Class B; Richard Thompson, Thomas & Betts Co., First Award, Class E. BACK ROW: A. M. Street, Jenkins Brothers, Honorable Mention, Class A; Ellsworth S. Grant and W. D. Horner, Allen Manufacturing Co., Honorable Mention, Classes D and E; F. J. Whelan, Worthington Pump & Machinery Corp., Honorable Mention, Class D; F. W. Bonacker, Carborundum Co., Honorable Mention, Class C.

Mitchell To Fabricate Heavy Plate

Lloyd E. Mitchell Inc., Baltimore, completed a new department for heavy plate fabrication. A one-inch plate shear has been installed, along with ten welding machines, drill presses and other equipment. This department is an addition to that now engaged in the fabrication of light gage sheet metal work. George W. Mitchell is president.

Reintjes Opens District Office

Geo. P. Reintjes Co., Kansas City, Mo.—furnace walls—opened a district office at 3530 Forbes St., Pittsburgh.

Enamel Institute Seeks Members

Porcelain Enamel Institute opened its doors to new membership. Three types of manufacturers are eligible to become active members: "Captive" porcelain enameling plants; suppliers to the industry, including those allied with frit manufacturers; independent porcelain enameling companies engaged in enameling the products or components of other manufacturers. Membership applications are handled by the Institute's Development Committee, 1010 Vermont Ave. N.W., Washington 5.

Reid-Avery To Erect Building

Reid-Avery Co. Inc., Dundalk, Md., manufacturer of gas welding wire, welding and stainless steel electrodes, etc., plans to erect a building to be used largely for storage. C. L. Virden is president.

Westinghouse Plans Meter Plant

Westinghouse Electric Corp., Pittsburgh, will build a multimillion-dollar electric meter plant at Raleigh, N. C. When this plant is completed about July 1, 1953, all meters will be manufactured there.

Goodyear Enlarges Clearwater Mills

Goodyear Tire & Rubber Co.'s rayon tire fabric production facilities are being expanded by construction of a large addition to its Clearwater mills at Cartersville, Ga. The addition will cost in excess of $500,000.

"Joe, who can make these small parts to our close 'specs'?"

"Torrington can, Tom. They have the experience and equipment to maintain precision tolerances on any quantity of small metal parts."

Small precision parts often take more production time than can be spared. That's why many leading manufacturers have turned over their parts problems to Torrington. Using the latest automatic and semi-automatic equipment, our Specialty Department produces hundreds of thousands of parts every day to the exacting specifications of hundreds of customers. These companies—some of them Torrington customers for over 40 years—have learned that they save both time and money when their small metal components are made by Torrington.

Why not send us a blueprint or sample of *your* small parts? We will quickly tell you how little it costs to have uniformly accurate components.

THE TORRINGTON COMPANY
Specialty Department
556 Field Street • Torrington, Conn.
Makers of
TORRINGTON NEEDLE BEARINGS

Advertising Index

Accurate Perforating Co. 178
Aetna-Standard Engineering Co., The ..... Inside Back Cover
Air Reduction 124
Ajax Electrothermic Corporation 46
Ajax Manufacturing Co., The 33
Alan Wood Steel Co. 154
Allis-Chalmers ..... Inside Front Cover
American Brake Shoe Co., Brake Shoe & Castings Division 70
American Brass Co., The 23
American Bridge Division, United States Steel Co. 43
American Chain & Cable, American Chain Division 122
American Chemical Paint Co. 10
American Gas Association 16
American Gas Furnace Co. 178
American Nickeloid Co. 13
American Pullmax Co., Inc. 176
American Zinc, Lead & Smelting Co. 166
American Zinc Sales Co. 166
Angier Corporation 153
Anti-Corrosive Metal Products Co., Inc. 175
Armstrong-Blum Mfg. Co. 55
"Automatic" Sprinkler Corporation of America 111

Bailey, William M., Co. 114
Baker-Raulang Co., The 69
Basic Refractories, Inc. 7
Belmont Iron Works, The 178
Bethlehem Steel Co. 1
Boiardi Steel Corporation 176
Boston Woven Hose & Rubber Co. 34
Brad Foote Gear Works, Inc. 24
Bryant Chucking Grinder Co. 35, 36

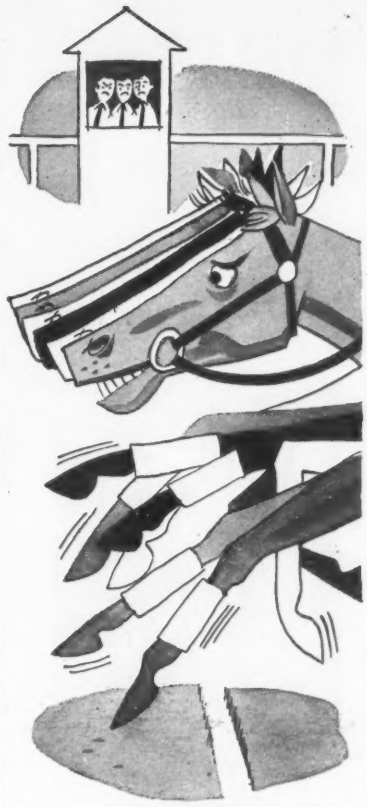
Cadman, A. W., Mfg. Co. 174
Carpenter Steel Co., The, Alloy Tube Division. 40
Central Steel & Wire Co. 29
Chain Belt Co. 32
Chase Brass & Copper Co. 141
Chemical Corporation, The 5
Cincinnati Shaper Co., The 52
Clark Controller Co., The 17
Clark Equipment Co., Industrial Truck Division 143
Clearing Machine Corporation 150
Cleveland Crane & Engineering Co., The 135
Cleveland Steel Tool Co., The 178
Clipper Manufacturing Co. 170
Columbus McKinnon Chain Corporation 132
Consolidated Products Co., Inc. 181

Danly Machine Specialties, Inc. 118, 119
Detroit Power Screwdriver Co. 174
Detroit Steel Corporation, Reliance Steel Division 56
Dings Magnetic Separator Co. 162
Diversey Corporation, The 172
Dodge Manufacturing Corporation 42
Dravo Corporation 22
Duplex Mfg. & Foundry Co. 181

Eastern Machine Screw Corp., The 176
Eaton Manufacturing Co., Foundry Division .. 4
Electric Controller & Mfg. Co., The 88
Electric Equipment Co. 181
Electric Products Co., The 6
Electric Storage Battery Co., The 130, 131

Fansteel Metallurgical Corp., Weiger-Weed & Co. Division 182
Ferro Corporation 176
Foster, L. B., Co. 181

Continued on following page



need a better finish?

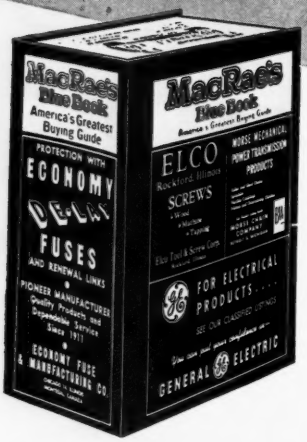
Torrington Swaging Machines—delivering 4000 hammer blows a minute—work out surface imperfections quickly...produce a finish far superior to that obtained by other reduction methods. Swaging improves the quality of the material, too, and utilizes every ounce of stock.

"The Torrington Swaging Machine" describes all the advantages of swaging and gives full details on all Torrington machines. A copy is yours for the asking.

THE TORRINGTON COMPANY
Swager Department
556 Field Street • Torrington, Conn.
Makers of
TORRINGTON NEEDLE BEARINGS

WHERE

Purchasing Officials Locate Your Product Quickly . . in MacRae's



Materials shortages make it essential to find new sources —fast! Most best-rated firms prefer the most accurate, most accessible industrial directory and reference medium — MacRAE'S BLUE BOOK, containing all the information they need

ALL in ONE BOOK

For Advertising and book rates, write:

MacRAE'S BLUE BOOK

America's Greatest Buying Guide

18 East Huron St., Chicago 11, Ill.

Advertising Index

Concluded from preceding page

Gaylord Container Corporation 133
Giddings & Lewis Machine Tool Co. 20, 21
Gisholt Machine Co. 19
Goodrich, B. F., Co., The 3
Gould-National Batteries, Inc. 127
Great Lakes Steel Corporation 74
Grip Nut Co. 170

Hamilton Tool Co., The 148
Harnischfeger Corporation, Welding Division.. 47
Heppenstall Co. 82
Horsburgh & Scott Co., The 146
Hunt, C. B., & Son, Inc. 87

Inland Steel Co. 60
Iron & Steel Products, Inc. 181

Johns-Manville 50

Kaiser Steel Corporation 128
Kenilworth Steel Co., The 81

Laminated Shim Co., Inc., Stampings Division 149
Leake Stamping Co., The 179
Lindberg Engineering Co. 110
Linde Air Products Co., A Division of Union Carbide & Carbon Corporation..... 25
Lobdell United Co. 147
Logan Engineering Co. 105
Lumnite Division, Universal Atlas Cement Co.. 18

MacRae's Blue Book 184
Manheim Manufacturing & Belting Co. 116
Marchant, Geo. F., Co. 173
Mathews Conveyer Co. 177
May-Fran Engineering, Inc. 109
Metal & Thermit Corporation 137
Michigan Steel Tube Products Co. 117
Morse Chain Co. 48
Morse Twist Drill & Machine Co.....14, 15

National-Standard Co. 31
National Steel Corporation 74
New Britain Machine Co., The, The New Britain-Gridley Machine Division 77

Ohio Crankshaft Co., The 49
Ohio Locomotive Crane Co., The 178

Phillips Petroleum Co. 2
Pittsburgh Lectromelt Furnace Corporation ... 123
Porter, H. K., Inc. 126
Potter & Johnston Co., Subsidiary of Pratt & Whitney Division Niles-Bement-Pond Co. .. 115
Public Service Electric & Gas Co. 125

Racine Hydraulics & Machinery, Inc. 174
Ready-Power Co., The 112
Reed Engineering Co. 178
Reliance Steel Division, Detroit Steel Corporation 56
Republic Steel Corporation 11
Revere Copper & Brass, Inc. 99
Reynolds Metals Co. 38, 39
Rockford Products Co., Inc. 177
Rogers, Dayton, Manufacturing Co. 176
Rust Furnace Co. 107
Rust-Oleum Corporation 41
Ryerson, Joseph T., & Son, Inc. 59

St. Joseph Structural Steel Co. 181
Sharon Steel Corporation 78
Shenango-Penn Mold Co. 136
Shimer, Samuel J., & Sons, Inc. 178
Sibley Machine & Foundry Corp. 129
Silent Hoist & Crane Co. 171
Simmons Machine Tool Corporation 28
SKF Industries, Inc. 51
Standard Steel Spring Co. 26, 27
Standard Tube Co., The 134
Steel Equipment Co. 30
Sun Oil Co. 85
Sun Shipbuilding & Dry Dock Co. 45

Thomas Machine Manufacturing Co. 113
Tide Water Associated Oil Co. 37
Timken Roller Bearing Co., The, Steel & Tube Division ..... Back Cover
Tomkins-Johnson Co., The 140
Torcon Corporation 144, 145
Torrington Co., The, Specialty Department... 183
Torrington Co., The, Swager Department..... 183
Torrington Manufacturing Co., The..... 12

Union Carbide & Carbon Corporation, Linde Air Products Co. 25
United States Steel Co. 43, 138
United States Steel Corp., Subsidiaries.18, 43, 138
United States Steel Export Co. 43
United States Steel Supply Division, United States Steel Co. 138
Universal Atlas Cement Co., Lumnite Division. 18

Vanadium Corporation of America..... 121
Van Norman Co. 8, 9

Ward Steel Co. 177
Weiger-Weed & Co., Division of Fansteel Metallurgical Corp. 182
Wesche, B. A., Electric Co., The..... 172
Westinghouse Electric Corporation 44
Wheland Co., The 179
Wilkie Die Products Co. 181
Wisconsin Motor Corporation 171
Worthington Pump & Machinery Corporation.. 142

York Engineering & Construction Co. 120
York-Gillespie Manufacturing Co. 120

~ ~ ~

Table of Contents Page 5

Classified Advertising Page 181

56
11
99
8, 39
177
176
107
41
59

181
78
136
178
129
171
28
51
6, 27
134
30
85
45

113
37

Cover
140
145
183
183
12

25
138
138
43

138
18

121
8, 9

177

182
172
44
179
181
171
142

120
120

E L